

United Republic of Tanzania

FY2021 Ex-Post Evaluation Report of

Japanese Grant Aid Project

‘The Project for Improvement of Tazara Intersection,  
the Project for Improvement of Tazara Intersection (Phase2)  
and  
the Project for Improvement of Tazara Intersection (Phase3)’

External Evaluator: Ruiko Hino,

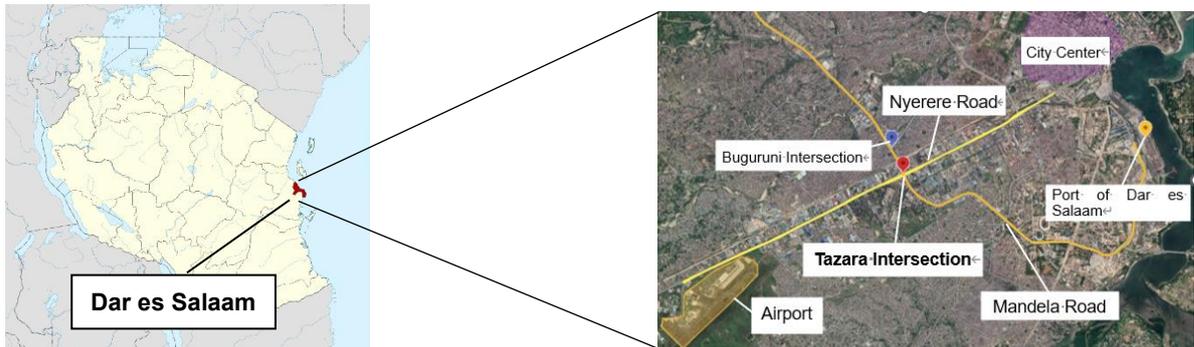
Foundation for Advanced Studies on International Development

## **0. Summary**

The project constructed the first flyover in Tanzania in the direction of Nyerere Road at the Tazara Intersection to create a grade separation; the project aimed to alleviate traffic congestion on Nelson Mandela Road (hereinafter referred to as ‘Mandela Road’) and Nyerere Road starting from this intersection. About relevance, the project was found to be consistent with the development plan of Tanzania and the development needs which promoted the development of the transport sector in Dar es Salaam, a critical economic hub in Tanzania. In terms of coherence, the project was consistent with Japan’s ODA policy, according to which infrastructure development is a priority area. The cooperation and coordination with other projects and support within JICA were also as expected, and the results were confirmed, as well as with other donor projects, as expected. In light of the above, relevance and coherence were high. Regarding efficiency, all outputs were achieved as planned, the project cost was within the plan, and the project period slightly exceeded the plan, so the efficiency was high. Regarding effectiveness, degree of intersection saturation was significantly increased, average intersection transit time was reduced considerably on Nyerere Road, although not on Mandela Road, and Nyerere Road travel time was also significantly reduced when compared to the actual values. In addition, the impact of the project was also observed in terms of stabilising the livelihoods of low-income groups living in the outer-urban extension and improving safety within the intersection. Therefore, the effectiveness of the project’s implementation was generally as planned, and effectiveness and impact were high. Regarding sustainability, while no issues were observed in policies and systems or in institutional/organizational and technical aspects, some issues were observed regarding financial aspects and the current status of the operation and management system; the sustainability of the project was moderately low.

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

## 1. Project Description



Project location (source: prepared by the evaluator).



Flyover constructed by the project (photo by the evaluator)

### 1.1 Background

Dar es Salaam, the project site, is the largest city in Tanzania. Dar es Salaam is the starting point for major transport systems such as trunk roads, railways and ports and is a crucial transport hub for the whole of Tanzania. At the same time, the city is also an important gateway on the international corridor from the Port of Dar es Salaam, an excellent natural port facing the Indian Ocean, to neighbouring landlocked countries.

At the time of planning, traffic congestion in Dar es Salaam was worsening yearly due to population growth and an increase in the number of vehicles passing through the city. It was feared that, if appropriate measures were not taken, traffic congestion in the city would further worsen and hamper the economic growth of Tanzania and East African countries.

Under these circumstances, the Tanzanian government asked Japan to conduct a development study, *The Study for Formulation of Dar es Salaam Transport Policy and System Development Master Plan*, to improve the transport network in Dar es Salaam, and the Japan International Cooperation Agency (JICA) conducted the study from April 2007 to June 2008. The development study developed a Transport Master Plan<sup>1</sup> with 2030 as the target year and selected several priority projects to be implemented between 2008 and 2015. This project is one of the priority projects selected in the said Master Plan. The target site, the Tazara Intersection, is located

<sup>1</sup> Dar es Salaam Urban Transport Master Plan (2008).

approximately 8 km south-west of the city centre and is the intersection of Mandela Road (the most crucial major transport road from the port, connecting various trunk roads) and Nyerere Road (the only trunk road connecting the airport to the city), where traffic volume was very high. It was chronically congested, with vehicle speeds falling into the 6 km/h range during peak hours. The development study, therefore, proposed an elevated crossing as one of the most urgent intersections in Dar es Salaam where congestion relief measures should be implemented.

## 1.2 Project Outline

The objective of this project is to reduce congestion on Mandela Road and Nyerere Road starting from the Tazara Intersection by constructing a flyover in the direction of Nyerere Road at the intersection, thereby contributing to smooth traffic and logistics in the city of Dar es Salaam.

Grant Limit/Actual Grant Amount	The Project for Improvement of Tazara Intersection (hereinafter referred to as 'Phase 1') 3,127 million yen/3,127 million yen The Project for Improvement of Tazara Intersection (Phase 2) (hereinafter referred to as 'Phase 2') 346 million yen/346 million yen The Project for Improvement of Tazara Intersection (Phase 3) (hereinafter referred to as 'Phase 3') 1,722 million yen <sup>2</sup> /1,722 million yen  Total (Phase 1 to Phase 3) 5,195 million yen/5,195 million yen
Exchange of Notes Date /Grant Agreement Date	Phase 1 June 2013/June 2013 Phase 2 July 2014/July 2014 Phase 3 March 2015/March 2015
Executing Agency	Tanzania National Roads Agency (hereinafter referred to as 'TANROADS')
Project Completion	22 October, 2018
Target Area	Dar es Salaam
Main Contractor(s)	Sumitomo Mitsui Construction Co., Ltd.
Main Consultant(s)	Oriental Consultants Global Co., Ltd. Eight-Japan Engineering Consultants Inc. (Joint venture)
Preparatory Survey	May 2011–Feb 2012

<sup>2</sup> Includes a grant for a contingency of 157 million yen.

Related Projects	<p><b>Japanese ODA Loan</b></p> <ul style="list-style-type: none"> <li>- Road Sector Support Project 2 (April 2013)</li> </ul> <p><b>Technical Cooperation Projects</b></p> <ul style="list-style-type: none"> <li>- Project for the Capacity Development in Road Maintenance Management (2006–2011)</li> <li>- Dar es Salaam Comprehensive Urban Transport System Formulation Study (2007–2008)</li> <li>- The Capacity Development Project for Improvement of Dar es Salaam Transport (Phase 2) (2014–2017)</li> <li>- Project for Revision of Dar es Salaam Urban Transport Master Plan (2016–2018)</li> <li>- Feasibility Survey for Improving Night-time Road Safety through Application of Solar-powered Active Road Studs (2017–2018)</li> </ul> <p><b>Grant Aid Projects</b></p> <ul style="list-style-type: none"> <li>- The Project for Widening of New Bagamoyo Road (May 2010)</li> <li>- The Project for Improvement of Transport Capacity in Dar es Salaam (January 2013)</li> </ul> <p><b>Other International Organizations and Donors</b></p> <ul style="list-style-type: none"> <li>- Rehabilitation and upgrading of 16 km of Nelson Mandela Road (European Union, hereinafter referred to as the ‘EU’), completed in 2011)</li> <li>- Dar es Salaam Urban Transport Improvement Project (World Bank, hereinafter referred to as ‘WB’, (2017–2023, planned)</li> </ul>
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## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Ruiko Hino, Foundation for Advanced Studies on International Development

### 2.2 Duration of Evaluation Study

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

Duration of the study: September 2021–November 2022

The first field study was conducted remotely using local consultants.

The local consultant contract period: November 2011–November 2022

Duration of the second field study: 22 May, 2022–28 May, 2022

### 2.3 Constraints during the Evaluation Study

(Conducting the field study remotely using local consultants)

In this study, due to the impact of the spread of COVID-19, the external evaluator did not travel to the field for the first field study. The external evaluator utilised local consultants remotely to conduct an actual inspection of the project site, collect information and data, and interview project stakeholders, and the external evaluator scrutinised the content obtained and made an evaluation analysis and assessment.

(Information constraints during procurement and in the analysis of factors)

In analysing the challenges and factors in the project's procurement of construction contractors, there were only a limited number of parties with good knowledge of the situation at the time, and sufficient detailed information was not available. The analysis was mainly based on documents provided by JICA. Therefore, there were information constraints in this regard.

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

### 3.1 Relevance/Coherence (Rating: ③<sup>4</sup>)

#### 3.1.1. Relevance (Rating: ③)

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

The Government of Tanzania formulated *Tanzania Development Vision 2025* (hereinafter referred to as 'Vision 2025') in 1998 as a development plan with a long-term perspective. The vision aimed to improve the quality of life of the people, achieve good governance based on the law, and achieve a competitive and robust economy. It also stated that increased competitiveness requires advanced technological capabilities, high productivity and modern, efficient transport and communication infrastructures. The vision is the latest long-term perspective development plan at the time of the ex-post evaluation.

The *National Strategy for Growth and Reduction of Poverty* (2005/06–2009/10), which was the national development policy of Tanzania at the time of planning, identified the transport sector as a priority sector, and nearly 15% of the national budget was allocated to the sector every year. The road sector was also the most significant investment sector in the *10-year Transport Sector Investment Programme* (2007/08–2016/17), a comprehensive strategy document for the transport sector.

The national development plan of Tanzania at the time of the ex-post evaluation, the *National Five-Year Development Plan* (2021/22–2025/26) (hereinafter referred to as 'FYDP III'), indicated that the country was not taking advantage of its geographical comparative advantage in connecting the markets of neighbouring countries and its potential as a logistics hub linking the markets of regional trading blocs due to lack of infrastructure development. The construction of

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<sup>3</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

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

nine new flyovers was planned in Dar es Salaam to ease traffic congestion and provide quick access. In addition, the comprehensive transport sector strategy, *Phase Three of the Transport Sector Investment Programme (2018/19–2020/21)* (hereinafter referred to as ‘TSIP III’), stated that the road transport sector was to receive the most investment after the railway sector. Furthermore, the programme also stated that road transport is the most used mode of transport and the lifeline for the country’s economic development.

Thus, the national development plan of Tanzania at the time of planning and during the ex-post evaluation consistently positioned road sector development as a cornerstone of policy. Based on the above, the project is consistent with the development plan of Tanzania.

### 3.1.1.2 Consistency with the Development Needs of Tanzania

At the time of planning, the number of registered vehicles in Dar es Salaam was increasing rapidly at approximately 7% per annum, faster than the population growth rate (5.6% per annum), exacerbating traffic congestion. Traffic volumes at the target site, Tazara Intersection, were very high, with chronic congestion to the extent that vehicle speeds fell to 6 km/h during peak hours. Dar es Salaam is a major transport hub for Tanzania. If no measures were taken to alleviate traffic congestion, it was feared that the traffic congestion would worsen further, hindering the economic growth of Tanzania and East African countries.

From the time of planning to the time of the ex-post evaluation, the number of registered vehicles in Tanzania has increased, from approximately 160,000 in 2011 to over 270,000 by 2021.<sup>5</sup> There was also an increasing trend in traffic volume within the Tazara Intersection at the time of the ex-post evaluation, as shown in Table 1.

Table 1: Traffic volumes within the Tazara Intersection

(Unit: cars/12 hours)

2019	2020	2021
24,776	20,168	30,202

(Source: TANROADS)

In light of the above, the project is highly consistent with development needs in Tanzania, as the need to reduce traffic congestion in Dar es Salaam was consistently high at the time of planning and ex-post evaluation, and Dar es Salaam, the target site, is a critical transport and trading hub with neighbouring countries.

<sup>5</sup> Based on data from the Tanzania Revenue Authority.

### 3.1.1.3 Consideration and Fairness to Marginalised People

Although the project was not designed with particular consideration for marginalised people (children, women, people with disabilities, the elderly, etc.) at the time of planning, the pedestrian crossing was wide enough, and no steps were identified, resulting in a design that was somewhat accessible to the elderly and other people with walking difficulties (site visit and interviews with elderly and disabled people using the Tazara Intersection).<sup>6</sup>

### 3.1.1.4 Appropriateness of the Project Plan and Approach

The project was initially planned to be implemented under the grant limit of the Exchange Notes (hereinafter referred to as 'E/N') of Phase 1. However, the following circumstances led to the conclusion of new E/Ns for Phase 2 and Phase 3.

The original project cost was 3,127 million yen (the E/N grant limit of Phase 1), but the first tender (January 2014) was unsuccessful<sup>7</sup>. This necessitated another tender, but foreign currency accounted for approximately half of the construction cost, and the project cost increased significantly due to the yen's depreciation. This necessitated a partial scope cut of the original plan to accommodate the project within the E/N grant limit of Phase 1. The E/N of Phase 2 (grant limit of 346 million yen) was concluded in July 2014, as the bridges would not function as a whole facility if the construction subject to the scope cut were not implemented, and the expected effects, such as traffic congestion relief, would not be realised. After the E/N of Phase 2, a second tender was conducted (September 2014), but it was unsuccessful, and a third tender had to be conducted. After the second tender, there was a further depreciation of the yen. In the process of confirming the factors behind the unsuccessful tender, it became clear that the contractor side requested consideration for ensuring site safety, taking into account local traffic conditions and construction matters, due to the need to work at heights in this project (documents provided by JICA). As a result, the required project cost increased due to the need to ensure site safety, strengthen safety management and address various risks, including exchange rate fluctuations and local price increases. As a result, it was necessary to adjust the project cost reduction by cutting the scope of the facilities subject to the cooperation of Phase 1. The E/N of Phase 3 (grant limit of 1,722 million yen) was concluded because the bridges would not function as a whole facility if the construction subject to the scope cut were not implemented, and the expected effects, such as traffic congestion mitigation, would not be achieved.

The rapid depreciation of the yen, which was a significant factor in the change of plan, was difficult to envisage at the time of planning, and this can be considered an external factor. As for the risk that the contractors were aware of, it is believed that it was difficult for JICA/consultants to grasp.<sup>8</sup>

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<sup>6</sup> 10 people (8 elderly and 2 disabled) were interviewed (Mar 2022).

<sup>7</sup> A factor analysis of bidding irregularities is described in 3.2 'Efficiency'.

<sup>8</sup> Based on the interview with the JICA Tanzania Office and the consultant's response to the questionnaire.

Project Phase	Grant Limit of E/N (millions of yen)	2013												2014												2015																																			
		6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12																													
Phase 1	3,127	E/N												Tender Scope cut for part of the plan												Tender Scope cut for part of the plan																																			
Phase 2	346													Increase in the amount corresponding to the scope cut → E/N												Tender												Negotiated procurement												Construction start											
Phase 3	1,722																									Increase in the amount corresponding to the scope cut → E/N																																			
Project Phase	Scope of Works																																																												
Phase 1	Nyerere Road elevated crossing (2 lanes x 2 bridges) at Tazara intersection and intersection improvements, including traffic signal interlocking at intersection and neighborhood intersection																																																												
Phase 2	Bridge face pavement of the northbound lane citybound flyover bridge, roadbed and pavement of the approach roads to the flyover (applicable to the first scope cut)																																																												
Phase 3	Bridge superstructure (applicable to the second scope cut)																																																												

Chart 1 Exchange Notes and the tenders

(Source: prepared by the evaluator based on the documents provided by JICA)

From the above, it can be said that the two scope cuts and the increase in the project cost to compensate for the scope cuts were necessary changes to achieve the expected effects of the project's implementation, such as easing traffic congestion.

### 3.1.2 Coherence (Rating: ③)

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

At the time of planning, Japan's *Country Assistance Program for Tanzania* (June 2012) identified 'infrastructure development to support economic growth and poverty reduction' as a priority area, and the project was positioned within the 'Transport Network Development Programme'. In addition, the Fifth Tokyo International Conference on African Development<sup>9</sup> (hereafter referred to as 'TICAD') identified the 'promotion of infrastructure development and capacity building' as a critical issue. Furthermore, the *Yokohama Action Plan 2013-2017*, which outlines specific initiatives for the TICAD process, clearly stated 'development of key infrastructure in both urban and rural areas' as a priority area. This project corresponded to this plan.

As described above, consistency between the project and Japan's ODA policy can be observed.

<sup>9</sup> The Tokyo International Conference on African Development has been held seven times since 1993, led by the Government of Japan, in collaboration with the United Nations, the United Nations Development Programme (UNDP), the World Bank and the African Union Commission (AUC).

### 3.1.2.2 Internal Coherence

The JICA Development Study ‘Dar es Salaam Comprehensive Urban Transport System Formulation Study (2007–2008)’ was conducted with the objective of formulating an urban transport master plan, and this project was recommended as one of the high-priority projects in the developed urban transport master plan. In response to this recommendation, the government of Tanzania asked the government of Japan to implement the project, and the project was implemented and achieved the expected results. In addition, an advance feasibility study (hereinafter referred to as the ‘Pre-F/S’) of the project was conducted as part of the development study. The Pre-F/S was utilised in the planning of the project.

Solar-powered active road studs, a proposed product of the JICA Support for Japanese Small and Medium Enterprises (SMEs) Overseas Business Development ‘Feasibility Survey for Improving Night-time Road Safety through Application of Solar-powered Active Road Studs (2017–2018)’, were introduced for the purpose of night-time traffic safety at the project site. In the above project, the solar-powered active road studs were introduced to the government of Tanzania, and the Tanzanian side requested installation of the product on a pilot basis. In response to this request, a project design change was made to install the solar-powered active road studs, and the product was installed. In the opinion of the implementing agency, introducing the solar-powered active road studs has contributed to improving safety at the project site. This evaluation has also confirmed the impact of improved safety within the intersection, so it appears that the effect was close to what was expected.<sup>10</sup>

### 3.1.2.3 External Coherence

At the time of the planning and the implementation of the project, a project for bus rapid transit (hereinafter referred to as ‘BRT’), which WB and the African Development Bank supported, was coordinated with its development plan. Space has been provided between the two lanes of flyovers constructed under the project to allow BRT installation. In particular, during the preparatory survey of the project, the consultant conducted several interviews with the donors supporting the BRT project to confirm the plan and to share information on the project. In this way, appropriate coordination between the project and the BRT development plan was made and it was designed to ensure the effectiveness of the mutual projects and synergies are expected.<sup>11</sup>

The project was consistent with the development plan and development needs of the partner country, and no issues were identified in the project plan or approach. It is also consistent with ODA policy. Cooperation and coordination with other projects and assistance within and outside JICA were implemented as expected, and the results were confirmed.

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<sup>10</sup> Safety improvements within intersections are discussed in more detail in 3.4 ‘Impact’.

<sup>11</sup> BRT construction on Nyerere Road had not started at the time of the ex-post evaluation.

Therefore, its relevance and coherence are high.

### 3.2 Efficiency (Rating: ③)

#### 3.2.1 Project Outputs

A summary of the project's planned and actual outputs is given in Table 2.

Table 2: Planned and actual outputs

Item	Plan	Actual
Foundation works for flyover (bridge)	Reinforced concrete (RC) cast-in-place piles (2 bridges) Total number of piles: <u>132</u>	RC cast-in-place piles (2 bridges) Total number of piles: <u>133</u>
Flyover (bridge) substructure	Separate up and down lines flyover (2 bridges) RC abutments (2 abutments) RC piers (11 piers)	As planned
Flyover (bridge) superstructure	Up and down lanes separation flyover (2 bridges) - Main bridge (total length 155 m, total width 8.5 m) - Western approach bridge (total length 150 m, total width 8.5 m). - Eastern approach bridge (total length 120 m, total width 8.5 m). - Ancillary works (rubber bearings, expansion joints, bridge face waterproofing, bridge face drainage, guardrails)	As planned
Access road (Embankment section)	U-shaped retaining wall (total length 116 m) L-shaped retaining wall (total length 302 m) Gravity retaining wall (total length 106 m)	As planned
Pavement	Asphalt pavements Base layer: general road section (5 cm thick, 32,900 m <sup>2</sup> ) Bridge section (4 cm thick, 6,400 m <sup>2</sup> ) Surface layer: access roads (5 cm thick, 4,700 m <sup>2</sup> ), general roads and bridge sections (4 cm thick, 38,900 m <sup>2</sup> ) Interlocking block pavements: footpaths (4,800 m <sup>2</sup> )	As planned
Ancillary facilities work	Signalling system (1 set), road lighting (34 locations), road traffic signs (1 set), road markings (1 set), road drainage system (1 set), net fencing (830 m), turfing (5,500 m <sup>2</sup> )	<u>In addition to those listed on the left, solar-powered active road stud installations (92)</u>

(Source: prepared by the evaluator based on documents provided by JICA. Underlined parts indicate changes from the plan).

As shown in Table 2, all planned outputs were produced as planned. In addition, 92 solar-powered active road studs were installed as an additional output.

Changes from the outline design included changes to the left-turn lane geometry within the Tazara intersection,<sup>12</sup> and changes from the detailed design included changes to the construction method of the main bridge<sup>13</sup> and minor design changes in the pier foundation works of the

<sup>12</sup> The left-turn lane geometry was changed to allow for more efficient left turns within the Tazara Intersection.

<sup>13</sup> In order to shorten the construction period within the intersection, the construction of the three-diameter main bridge was changed from a three-block construction to a five-block construction. At the same time, the quantity of compression PC steel bars (high-strength steel bars) and reinforcing bars was changed, as well as the arrangement of the transverse-tightened PC cables.

southern flyover, all of which were implemented for efficiency and safety during construction and were reasonable changes.

Some items borne by Tanzania were also implemented almost as planned, although there were some delays, such as duty exemptions and exemption from customs clearance fees. Progress on items borne by the other party was monitored and, with some exceptions, implemented in a timely and appropriate manner.

In this project, based on the challenges in similar projects in the past (delays in items to be borne by the recipient government (removal of utilities, resettlement, etc.) affected the progress of the project), information on items to be borne by the Tanzanian side was shared during the monthly process meetings.<sup>14</sup>

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

In this evaluation, the planned project cost was taken as the total amount of the grant limits of E/Ns from Phase 1 to Phase 3 and compared with the actual input. As the information on the total project cost on the Tanzanian side was unavailable, only the Japanese side project cost was compared with the plan. The total project cost on the Japanese side was 100% of the planned amount and within the plan.

Table 3: Planned and actual project costs

(Unit: millions of yen)

	Plan	Actual	Ratio of Planned (%)
Total project cost	6,525	-	-
Japanese side	5,195	5,195	100 %
(Phase 1)	3,127	3,127	100%
(Phase 2)	346	346	100%
(Phase 3)	1,722	1,722	100%
Tanzanian side	1,330 <sup>15</sup>	-	-

(Source: prepared by the evaluator based on the documents provided by JICA)

#### 3.2.2.2 Project Period

The overall project period slightly exceeded the plan (110%). The main construction period was as planned. The main reason why the overall project period exceeded the plan was that it took 19 months for the three tenders and two months for the subsequent negotiated contract procurement period. Regarding the detailed design, its period was extended by four months

<sup>14</sup> At the time of planning, there were also plans to specify the details of the burden on the other party in the contractor's agreement and to clarify where responsibility for delays, etc. lies, but the implementation of these plans was not confirmed. The reasons for the lack of implementation could not be confirmed during the research for this evaluation.

<sup>15</sup> 20,390 million Tanzanian shillings (hereinafter referred to as 'Tshs'). Converted at 1 USD = 1,755 Tshs and 1 USD = 114.53 yen.

compared to the planned period in Phase 1. This is because this is the first project in Tanzania for the construction of a flyover, and the consultant and the implementing agency needed time to consult with the relevant parties and to respond to and revise the various points raised in the tender documents (documents provided by JICA).

Table 4: Planned and actual period of the project

	Plan	Actual	Ratio of Planned (%)
Total	June 2013–April 2018 59 months	June 2013–October 2018 65 months	110%
Detailed design	November 2012–February 2013 4 months ( <i>Note 1</i> )	May 2013–Dec 2013 8 months	(200%)
Bidding period	July 2013–September 2013 (3 months) ( <i>Note 1</i> ) June 2014–September 2014 (4 months) ( <i>Note 2</i> ) Mar 2015–May 2015 (3 months) ( <i>Note 3</i> )	Nov 2013–May 2015 19 months	(190%)
Negotiated contract procurement period	-	September 2015–October 2015 2 months	N/A
Main construction	June 2015–April 2018 35 months	December 2015–October 2018 35 months	100%

(Source: prepared by the evaluator based on materials provided by JICA).

*Note 1:* Period planned in Phase 1. *Note 2:* Period planned in Phase 2. *Note 3:* Period planned in Phase 3. The ratio of planned for the detailed design compares with the period planned in Phase 1. In contrast, the ratio of planned for the bidding period compares with the total bidding period for Phase 1 to Phase 3.

Column 1: Challenges and factors in the procurement of the contractor for the project.			
Three tenders were conducted for the project, taking 19 months for the tender period; none of the three tenders were very competitive, and the tender prices exceeded the target prices (see table below).			
	Bidding date	Number of tendering companies	Reason for a malfunction
1st tender	January 2014	2 companies (X and Y)	Exceeded the target price (145%)
2nd tender	September 2014	1 company (X)	Exceeded the target price (119%)
3rd tender	May 2015	1 company (Y)	Exceeded the target price (139%)
(Source: prepared by the evaluator based on the documents provided by JICA)			
The main reasons for the low competitiveness of the tenders were that (i) the contractors perceived that there were risks in the implementation of the project (traffic restrictions by the client <sup>16</sup> and the risk of utility relocation not being implemented in a timely and appropriate manner <sup>17</sup> ) and (ii) the Japanese construction industry was booming and there was a significant labour shortage, which led to contractors			

<sup>16</sup> The project involved the construction of a flyover on top of the existing road, which required traffic control to carry out the work on top of the existing road while maintaining traffic on the alternate route (a side road newly constructed by the project).

<sup>17</sup> Based on the documents provided by JICA and the interview with the consultants and the contractor.

holding back from bidding. This is considered to be the case. Reasons (i) and (ii) were not fully understood by JICA and the consultants, at least at the time of the first tender.<sup>18</sup> It is believed that some Japanese contractors were aware that delays in utility relocation had led to delays in project implementation in previous projects in Tanzania.

Secondly, it is believed that the main reasons for the excess of the target price are exchange rate fluctuations, the risk of price increases<sup>19</sup> and the project implementation risks reflected in the bid prices of the responsive bidders. Actions were taken to address these issues before the second bidding round, such as increasing the project cost by concluding the E/N of Phase 2, clarifying the instructions on the costing rate in the bidding documents and obtaining a letter of commitment from the client regarding traffic control implementation and utility relocation. Before the third bidding, actions were taken to increase the project cost by concluding the E/N of Phase 3 (including the application of the grant for contingency),<sup>20</sup> changing the estimation assessment method, changing the estimation rate, etc.,<sup>21</sup> all of which resulted in unsuccessful bids<sup>22</sup> (documents provided by JICA).

The consultant conducted three rounds of estimations at the time of bidding, with multiple persons in charge of verification, comparison and review with similar projects, confirmation of the cost estimate by the Grant Aid Design and Cost Estimate Review Office and the Loan, Grant and General Administration Department of JICA, and exchange of opinions with the contractors. It appears that efforts to reduce uncertainty in the cost estimate were appropriately made (questionnaire response from the consultant).

The three tenders for the project were conducted in 2014 and the first half of 2015, when the 'Comprehensive Improvement Initiatives'<sup>23</sup> had been implemented within the Japanese grant aid projects. At the time of the ex-post evaluation, the grant for contingency has been extended to all facility construction projects, and the response to risks such as exchange rate fluctuations and price increases has been strengthened. In addition, with regard to items to be borne by the counterpart country, including utility relocation, which was a factor in the contractors' refraining from bidding for the project, the responsible entity, process details and estimated amount for each item are confirmed in an agreed document at the study stage. A report is received from the counterpart government at the implementation stage. Additionally, for grant aid projects since the November 2015 cabinet meeting, no public announcement will be made in principle if the counterparty-borne works, such as utility relocation, are not completed. Therefore, it can be said that the risks of exchange rate fluctuations and price increases, which were an issue when procuring contractors for the project, and the risks in project implementation have been addressed through the comprehensive approach of the grant aid project at the time of the ex-

<sup>18</sup> With regard to (i), at the time of the second tender, the client's letter of commitment regarding traffic control implementation and utility relocation was attached to the tender documents. For (ii), no direct action was taken after the second tender.

<sup>19</sup> The exchange rate used for the estimation at the time of the preparatory survey, Phase 1, Phase 2 and Phase 3 were JPY 83.00/USD, JPY 93.43/USD, JPY 102.32/USD and JPY 114.53/USD, respectively. The price inflation rates in Tanzania from the planning to the bidding were 7.9% (2013), 6.1% (2014) and 5.6% (2015) (IMF). In addition, prices of key materials and equipment in Tanzania increased by 16% between the conclusion of the E/N of Phase 1 and before the conclusion of the E/N of Phase 2 (documents provided by JICA).

<sup>20</sup> Since the grant for contingency was introduced on a trial basis in October 2009 and then extended to all grant aid projects involving 'facility construction' and some grant aid projects involving 'equipment procurement' in 2015 and the first and second tenders were before the extension of the application, the application of preliminary costs at the time of the conclusion of the third E/N is considered to be appropriate.

<sup>21</sup> With regard to estimation assessments, the 15% reduction from the lowest price at the time of the third-party estimate was changed to the lowest price. With regard to the exchange rate for estimation, the rate was changed from the average of the last six months to the average of the last three months.

<sup>22</sup> Company Y, which participated in the third tender, had previous experience in implementing a project with TANROADS as the client, which could be seen as a reflection of the risk in implementing the project in the bidding price.

<sup>23</sup> [https://www.jica.go.jp/activities/schemes/grant\\_aid/index.html](https://www.jica.go.jp/activities/schemes/grant_aid/index.html) (accessed 2022-8-25)

post evaluation.

On the other hand, the comprehensive approach does not directly address trends in the Japanese construction market and the declining willingness of constructors to bid, which were not fully understood at the time of procuring constructors for the project. If a response to this issue were to be considered, the Japanese construction market trends could be monitored from the planning stage, and if demand in the Japanese construction market shows an upward trend, measures such as increasing the number of projects briefing sessions for interested companies during the survey stage to encourage constructors to bid for the project could be considered. In this case, the policy on the implementation of items to be borne by the client and successful examples of grant aid in the implementing country (e.g., examples where safety considerations were implemented through appropriate coordination among relevant stakeholders, as in the case of this project) should be communicated to increase the willingness to bid in countries and regions where the project implementation risk is considered relatively high, such as in Africa.

As mentioned above, the duration of the main construction work was as planned. It was confirmed that the following actions were taken to ensure efficient implementation of the main construction work (the consultant's response to the questionnaire).

- Securing traffic for construction vehicles by deploying traffic controllers. This prevented delays in the delivery of materials and equipment and improved the efficiency of the work.
- The piers were installed by crane after assembly of the semi rebar on the ground. This shortened the construction cycle.

It can also be considered that appropriate safety measures were taken and that the fact that there were no accidents led in some aspects to the efficient implementation of the works. The following specific safety measures were taken (the consultant's response to the questionnaire and interview).

- Close coordination between the contractor, the implementing agency and the traffic police was achieved, and traffic control by the traffic police was properly enforced during traffic management (when existing roads are closed to traffic and traffic is secured via alternate routes such as temporary roads), avoiding severe traffic congestion.
- When major traffic restrictions were in place, such as changes to vehicle traffic lanes and right-turn prohibitions for large vehicles, traffic restriction information was broadcasted via radio for several weeks before and after.
- 'Japanese-style safety management' was implemented to ensure safety management and increase awareness and motivation among workers (see the column in 3.3.2 'Impact').
- The sub-contractor procured and supplied the necessary safety equipment (helmets, gloves, boots, goggles, etc.) to the workers in accordance with the contract with the contractor.

The output of the project was as planned. Although the project cost was within the plan, the project period slightly exceeded the plan. Therefore, efficiency of the project is high.

### 3.3 Effectiveness and Impacts<sup>24</sup> (Rating: ③)

#### 3.3.1 Effectiveness

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

Baseline values, target values and actual values at the time of the ex-post evaluation of the effect indicators in quantitative effectiveness are presented in Table 5.

##### ① Degree of intersection saturation

The degree of intersection saturation decreased significantly from the baseline value, and the target value was achieved. An intersection is considered saturated if the degree of intersection saturation is above 1.0, but the degree of intersection saturation at the Tazara Intersection at the time of the ex-post evaluation was 0.81, confirming that it was not saturated.

##### ② Average intersection transit time

The average intersection transit time achieved the target on Nyerere Road but not Mandela Road. For Mandela Road, there was traffic congestion at the section before and after the Tazara Intersection and due to the bus terminal, and there was also information that traffic volumes had increased due to improvements at the Dar es Salaam Port; these factors are considered to have contributed to the failure to achieve the target value.

##### ③ Nyerere Road travel time

Nyerere Road travel time achieved the target in the off-peak hours and almost achieved the target in the afternoon peak hours. Target values were not achieved for the morning peak hours. The overall average did not meet the target value, but compared to the baseline value, it was reduced by more than one minute as the baseline, and target values for this indicator are based on simulations. Therefore, the comparisons between the simulated values and actual values have constraints. Accordingly, comparisons were also made between the actual values at the time of planning and the actual values at the time of ex-post evaluation (see Table 6). The results showed a reduction of seven minutes in the morning peak hours and more than five minutes in the off-peak hours and afternoon peak hours.

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<sup>24</sup> When providing the sub-rating, Effectiveness and Impacts are to be considered together.

Table 5 Effectiveness indicators

(Unit: listed in the table)

	Baseline value	Target value	Actual value	
	2011	2021	2022	
		3 years After Completion	4 years After Completion	
① Degree of intersection saturation ( <i>Note 1</i> )	1.31	1.14	0.81	
② Average intersection transit time ( <i>Note 2</i> ) (seconds/vehicle kilometre)	166	95	88 (Nyerere Road) 223 (Mandela Road)	
③ Nyerere Road travel time ( <i>Note 3</i> ) (minutes)	28	26	Overall average	26.9
			Morning peak hour average	33.2
			Off-peak hour average	21.0
			Afternoon peak hour average	26.4

(Source: prepared by the evaluator based on the ex-ante evaluation and the traffic survey results).

*Note 1:* The baseline and target values are the hourly saturation averages for the afternoon peak hours (16:00–19:00). As the intersection saturation is generally compared using the saturation during the busiest hours, for this evaluation, a traffic survey was conducted (16 February, 2022) during the morning peak hours (6:00–9:00), when more congestion was observed than during the afternoon peak hour. The actual value of the degree of intersection saturation was calculated at the busiest hour (7:00–8:00).

*Note 2:* The baseline and target values are the results of an all-way simulation using observed traffic volumes during the morning peak hour (7:00–8:00). The actual values are averages of measured intersection transit times on Nyerere Road and Mandela Road (10 February and 10 March, 2022). Therefore, there are certain constraints in comparing the reference/target values with the actual values (the consultant's response to the questionnaire).

*Note 3:* Both baseline and actual values are simulated values for the 11 km from the airport to the city centre based on the traffic survey during the preparatory study. The actual values are averages of the time taken to make three round trips every hour from the airport to the city centre (11 km) in the morning peak hours (6:00–9:00), off-peak hours (12:00–15:00) and afternoon peak hours (16:00–19:00) (values for the morning peak hours and afternoon peak hours were measured on 8 February, 2022, and values for the off-peak hours were measured on 25 May, 2022). The baseline and target values are simulated and unsuitable for comparison with the actual measured values, which are influenced by various external factors (interview with the consultant).

Table 6: Comparison of Nyerere Road actual travel time

(Unit: minutes)

	Actual values (2010)	Actual values (2022)
Morning peak hours	37.6	30.1
Off-peak hours	24.0	19.1
Afternoon peak hours	29.3	23.9

(Source: prepared by the evaluator based on data provided by the consultant and the results of the traffic survey)

*Note:* Actual values are the average time of travel from the airport to the 10.2 km point in the direction of the city centre; for 2010, the average of two trips, respectively, and for 2022, the average of three trips (the measurement dates are the same as in Table 5, ③).

### 3.3.1.2 Qualitative Effects (Other Effects)

#### 1) Commuting time of the poor living in the outer urban extension

The findings of a qualitative study<sup>25</sup> of people living in the outer urban area and using

<sup>25</sup> Of twenty-one residents who use Nyerere Road on a daily basis, 20 have household incomes below the low- and middle-income country poverty line (USD 3.2 per day) (gender breakdown; 16 male, 4 female. Age breakdown; two in

Nyerere Road confirm that commuting time had decreased for residents who use Nyerere Road to commute to work or school. Twelve out of 17 valid respondents (70%) indicated that their commuting time to and from work had decreased significantly, while four (23%) indicated their commuting time had been reduced slightly.<sup>26</sup> In addition, 16 out of 17 respondents (94%) cited the implementation of the project as a factor in the decrease in commuting time to and from work.

#### 2) Changes in access time to markets for the poor living in the outer urban extension

The results of the qualitative survey confirm that the access time to the market had decreased for residents using Nyerere Road. Eight out of 18 valid respondents (44%) indicated that the access time had been reduced significantly, while 10 (56%) indicated that the access time had decreased slightly. In addition, 17 out of 18 (94%) cited the implementation of the project as a factor in the decrease in access time.

#### 3) Changes in access time to health facilities for the poor living in the outer urban extension

The results of the qualitative survey confirmed that the access times to health facilities had decreased for residents using Nyerere Road. Nine out of 14 valid respondents (64%) stated that the access time had been reduced significantly, while five (36%) noted that the access times had decreased slightly. All 14 respondents cited the project implementation as a factor in the decrease in access time.

Regarding 1) to 3), five minibus operators operating on routes using Nyerere Road were interviewed about the reduction in travel time on their routes, with three out of five (60%) reporting a significant reduction and two out of five (40%) reporting a slight decrease.<sup>27</sup> All of them also cited the implementation of the project as a factor in the reduction in driving time. In addition, three out of five respondents stated that the number of trips on the operational route had increased. As many residents living in the outer urban area use minibuses to commute to work and school and to access medical facilities, the reduction in the travel time of minibuses travelling on Nyerere Road supports the expression of the effect of the time reduction in 1) to 3) above.

### 3.3.2 Impacts

#### 3.3.2.1 Intended Impacts

- 1) Revitalisation of logistics with landlocked countries through reduced time and transport costs in freight transport

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their 60s, three in their 50s, eight in their 40s and seven in their 30s) were included in the analysis. Note that Tanzania's gross domestic product per capita is USD 1,076 (2018, WB), and it is classified as a low- and middle-income country. The survey was conducted in February 2022.

<sup>26</sup> Questions were asked using the six-case method (significantly less, slightly less, no change, slightly more, significantly more, don't know). The same applies to questions 2) and 3) and to the survey of minibus operators.

<sup>27</sup> The survey was conducted in March 2022.

In recent years, Tanzania's economic activity related to 'transport and storage' has grown faster than the real economic growth rate.<sup>28</sup> Looking at the value of Tanzania's exports to the seven countries bordering Tanzania,<sup>29</sup> the average value of exports (by country) in 2018–2020, after the project's implementation, except for exports to Kenya and the Democratic Republic of Congo, was significantly higher than the average value (by country) in 2015–2017, before the project's implementation. Thus, logistics and trade with bordering landlocked countries are seen to be expanding.<sup>30</sup>

From the results of interviews with two transporters and interviews with six enterprises along Nyerere Road and Mandela Road,<sup>31</sup> the reduction in the time taken to transport goods was confirmed, but the reduction in transport costs as an effect of the implementation of the project was not confirmed, although it was confirmed to a certain extent.<sup>32</sup> Regarding the number of transport trips, interviews with the transporters confirmed an increase in the number of transport trips, but it could not be confirmed that this was an effect of the project. From the interviews with the enterprises along the two roads, it could not be confirmed that the number of transport trips had clearly increased.

From the above, it appears that logistics and trade between Tanzania and the neighbouring landlocked countries have been revitalised. But it is impossible to determine clearly from the findings conducted in this evaluation whether the effects of project implementation have contributed to the revitalisation of logistics and trade between Tanzania and neighbouring landlocked countries.

## 2) Stimulation of commercial activity through reduced time and costs in freight transport

As indicated in 1) above, although a reduction in transport time was confirmed, a reduction in transport costs was not confirmed from the results of interviews with the six enterprises along the two roads in this evaluation. Four enterprises answered that the frequency of domestic transport increased between 2019 and 2021 after the completion of the project, but the reasons for this were changes in the business environment of each enterprise and the increase in demand. Therefore, it was not confirmed that the commercial activities were stimulated due to reduced time and costs in freight transport.

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<sup>28</sup> Annual Report 2020/21 of the Bank of Tanzania (p. 23)

<sup>29</sup> Kenya, Uganda, Democratic Republic of Congo, Burundi, Rwanda, Malawi and Zambia.

<sup>30</sup> Annual Report 2020/21 of the Bank of Tanzania (p. 224). Average export value from 2018 to 2020 from Tanzania to neighbouring countries compared to the average export value from 2015 to 2017; exports to Uganda increased by 338%; to Burundi, by 236%; to Rwanda, by 473%; to Malawi, by 138% and to Zambia, by 138%.

<sup>31</sup> The survey was conducted in January 2022.

<sup>32</sup> Two transporters stated that there had been a reduction in transport costs, which they attributed to improvements at the Dar es Salaam port. Of the six enterprises along the two roads, five were transporting goods out of the country. Three of these five enterprises stated that there had been a reduction in transport costs between 2019 and 2021, but one of them stated that long-term transport costs had increased and the other stated that transport costs had increased in 2021, with no clear identification of a reduction in transport costs.

- 3) Increased economic activity and stabilisation of livelihoods through improved access from low-income areas to the city centre and reduced access time to health facilities

The implementation of the project has reduced commuting time, access time to markets and access time to health facilities.

(Stabilisation of livelihoods) The qualitative survey of residents confirmed that their health concerns have decreased.<sup>33</sup> The survey also revealed that the reduction in commuting time had created more time in their daily lives to enjoy personal activities such as having a leisurely cup of tea or breakfast, doing household chores, preparing for work, and health care.<sup>34</sup>

(Increased economic activity) When the increase or decrease in income after the project implementation was confirmed for the past three years through the qualitative survey of residents, about half of the valid respondents indicated that their income had increased, while about half also indicated that their income had decreased<sup>35</sup>. Therefore, there was no evidence of an increase in income after the implementation of the project. Regarding business opportunities, around half (45%) of the valid respondents reported an increase. All of them attributed this to the fact that the project had reduced their commuting time, resulting in more time allocated to work. On the other hand, 30%—six of the valid respondents—stated that business opportunities had decreased, with two stating that their business opportunities had decreased as a result of the project.<sup>36</sup> Based on the above statements on economic stabilisation, the results of the qualitative survey of residents conducted in this evaluation suggest that the expression of impact was limited. However, due to the small sample size, it is difficult to judge whether the effect of economic stabilisation is manifested solely based on these results.

In addition to the qualitative survey of residents, we conducted additional interviews with residents in the two wards (Majohe and Kuvule) along Nyerere Road west of the Tazara Intersection, where a relatively large number of low-income residents live and where economic development is assumed to have occurred after project implementation. We selected the target wards based on the analysis of night light intensity (annual average).<sup>37</sup>

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<sup>33</sup>All 15 valid respondents indicated that their health concerns had decreased compared to before the project was implemented. Fourteen of them indicated that their health concerns had decreased due to reduced access time to health facilities.

<sup>34</sup> Leisure time (8 respondents), doing household chores (6 respondents), preparing for work (1 respondent) and healthcare (1 respondent) (16 valid respondents).

<sup>35</sup> For 2019 and 2020, 50% of valid respondents (20 respondents) stated that their income had increased, while 40% stated that it had decreased; for 2021, 45% of valid respondents stated that their income had increased, while 45% also stated that it had decreased.

<sup>36</sup> One truck driver stated that after the project implementation, business opportunities decreased due to the construction of footpaths on Mandela Road around Tazara Intersection, which prevented people from parking on the side of the road. One motorbike driver stated that after the project implementation, business opportunities decreased because people no longer opted for motorbike taxis due to the reduced travel time on Nyerere road. For the remaining four respondents, the reason/background for the decrease in business opportunities could not be confirmed.

<sup>37</sup> We analyzed the night-time light intensity in six wards (Majohe, Kuvule, Kipawa, Kitunda, Kiwarani and Vinguguti) classified as 'low and middle income' levels in this evaluation. (Source: Charles Cosmas Mkalawa and Pan Haixiao, Dar es Salaam city temporal growth and its influence on transportation, Urban Planning and Transport Research: An Open Access Journal, 2014 Vol. 2, No. 1, 423-446, 2014). A comparison of night light (annual average) before (2017) and after (2021) the implementation of the project in six wards confirmed that the night light increased in all wards,

In the results, as in the qualitative survey of residents mentioned above, less than half of all respondents reported that their income had increased, and half said that business opportunities had improved after the project was implemented. However, in both wards, the time required to reach the Dar es Salaam city centre had significantly decreased from 2–3 hours before the project was implemented to 20–30 minutes. As a result, the two wards have seen an increase in population<sup>38</sup> and a corresponding increase in economic activity and expansion of some public services, such as an increase in the number of schools in the wards. Reduced travel time made it easier for retailers to source from the city centre, and suppliers of goods from the city centre also visited the communities more frequently.

From the above, as for the increased economic activity at the time of the ex-post evaluation, the impact of increased income and business opportunities for residents living in the outer urban extension was limited, but a trend towards the revitalisation of the ward economy in the outer area west of Tazara Intersection was confirmed. In addition, we observed the impact on health and stabilisation of livelihoods, such as the enjoyment of leisure time.

#### 4) Improved safety through a reduction in contact accidents within Tazara Intersection

The number of accidents at the Tazara Intersection since 2018 is shown in Table 7; it is impossible to confirm whether the number of accidents had decreased as a result of the implementation of the project, as data before 2018 was unavailable. A comparison between before and after implementation of the project was not possible.

Table 7: Number of accidents at Tazara Intersection

(Unit: number of accidents)

2018	2019	2020	2021
2	0	1	1

(Source: District Transport Officer)

On the other hand, when the safety of the intersection before and after the implementation of the project was confirmed in the qualitative survey of residents, all 20 valid respondents perceived the intersection as ‘dangerous’ before the project was implemented, but all perceived it as ‘safe’ after the project was implemented. All respondents perceived the number of accidents at

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which may have stimulated the economy in the wards concerned. Note that nightlight is an indicator of the brightness of the ground at night and has been found to be highly correlated with electrification and gross economic output. Among the six wards, we selected two with relatively low economic development and the largest change in average night light from before the project (Majohe [increased by 174%] and Kuvule [increased by 145%]), and we interviewed additional residents: four residents in Majohe ward and three residents in Kivule ward (May 2022); Majohe ward is located 15–23 km from Tazara Intersection, while Kivule ward is about 13–18 km away. (Source of night-time light data: Earth Observation Group, Payne Institute for Public Policy, Colorado School of Mines, VIIRS Nighttime Day/Night Band Composites Version 1).

<sup>38</sup> Prices in the wards were lower than in the city centre, and it was easier for low-income people to live there (resident interviews in the two wards).

the intersection as 'reduced', 17 of whom (85%) indicated that the construction of the flyover and its ancillary facilities under the project had directly contributed to the reduction in accidents. All five minibus operators also indicated that the number of accidents at the intersection had decreased significantly.

From the above, the statistical data did not confirm an apparent reduction in the number of accidents. However, it is assumed that there are a number of accidents that the police were not aware of, and based on the results of the qualitative research and the interviews with minibus operators, it is highly likely that accidents at the intersection have decreased and safety has improved.

### 3.3.2.2 Other Positive and Negative Impacts

#### 1) Impacts on the Natural Environment

The project did not fall under the large-scale road sector listed in the *JICA Guidelines for Environmental and Social Considerations* (established in April 2004), as we assessed it to have no significant undesirable effects on the environment, and it did not fall under the sensitive characteristics and sensitive areas listed in the guidelines. Therefore, the project was classified as Category B.

During construction, the implementing agency conducted monitoring based on the *Environmental Social Management Plan* prepared by the consultant and the contractor and reported in the *Monitoring of the Implementation of the Environmental and Social Management Plan Report*. According to the report, the implementation of the agency's questionnaire responses and the interview with the consultants, waste management, sewage management and soil pollution countermeasures were adequately implemented to a certain extent, and no significant problems were identified. The report also stated that noise and vibration were addressed by controlling the speed of vehicles.

Regarding post-completion monitoring, the Environmental and Social Management Division of the Infrastructure Planning Department in TANROADS was scheduled to conduct an environmental monitoring survey, but this was not carried out at the time of the ex-post evaluation. This is due to priorities within the agency (there are situations where environmental monitoring before and during project implementation is prioritised), but the implementing agency was aware of the need for implementation and will ensure that it will be carried out (interview with the implementing agency).

#### 2) Resettlement and Land Acquisition

At the time of planning, land acquisition from Tazara Station and the Tanzania Electric Supply Company (TANESCO) was planned without resettlement. At the time of the ex-post evaluation, it was confirmed that the land acquisition and land lease from Tazara Station were

carried out as planned without resettlement. Also, it was confirmed that TANROADS paid compensation to Tazara Station for the acquired land (the fence and gate in Tazara Station, which was included in the project site) and for the land used as the materials storage area during the construction phase. A land-lease fee was paid for the site (Interview with the implementing agency and the consultant's response to the questionnaire and interview).<sup>39</sup>

No resettlement of residents and no displacement of informal residents occurred within the project.

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

(Gender Equality) The results of the qualitative survey of residents in this evaluation did not identify any differences by gender in terms of effectiveness.

(Marginalized People) The project aimed to increase economic activity and stabilise the livelihood of low-income groups. As a result, the impact on economic activation was limited, but the impact on health and stabilisation of livelihood, such as enjoyment of leisure time, was confirmed to a certain extent.

(Social Systems and Norms, Human Well-being and Human Rights) Low-income residents who commute to work and school using Nyerere Road saw their commuting time reduced as a result of the project and were able to use the time created to enjoy leisure activities such as drinking tea and having breakfast or doing household chores. It can be considered that being able to lead their daily lives with more time to spare has improved the level of human well-being, and the project has made a contribution in this respect.

### 4) Other positive and negative impacts.

(Impact on street vendors) Street vendors engaged in commercial activities within Tazara Intersection at the time of the project planning relocated from the vicinity of the Tazara Intersection and engaged in activities elsewhere—for example, near the Buguruni Intersection<sup>40</sup> as a result of the implementation of the project. The street vendors were categorised as long-term vendors that the district office had approved and short-term, unauthorised vendors. At the time of the ex-post evaluation, no significant problems were identified with the relocation of the short-term, unauthorised vendors, based on site visits and interviews. For long-term street vendors approved by the district office, the relocation destination was unknown and could not be confirmed based on site visits.

(Ensuring the safety of residents in the construction area)

As indicated in 3.2.2.2, various safety measures were taken in the project. These safety

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<sup>39</sup> Compensation was 1,112 million Tshs. Information on land lease rates was not available.

<sup>40</sup> Mandera road junction, located a few hundred metres north of Tazara Intersection.

measures were considered to have contributed to ensuring the occupational safety of the construction workers and the residents living near the construction site, including users of existing roads.

Column 2: Zero accidents and zero occupational injuries in the project with Japanese-style safety management in Tanzania.

The project took nearly three years, introduced Japanese-style safety management and was completed with no accident or occupational injury. An overview of the ‘Japanese-style safety management’ implemented in the project is described below.

Daily	Morning meetings before work starts with the participation of all workers, <sup>41</sup> radio gymnastic exercises, on-site toolbox meetings, <sup>42</sup> hazard prediction activities, and clean-up after work
Weekly	Safety patrols by contractor personnel
Monthly	Safety patrols by the client, consultants and contractor personnel
At any time	Education for new entrants, presentation of safety slogans and danger warning signs, meetings with traffic police

sub-contractor for this project had worked on other JICA projects with TANROADS as the client over the past few years and is still undertaking projects for Japanese contractors. The sub-contractor had experience in practising Japanese-style safety management through other JICA projects before the implementation of this project, and these initiatives were not new but familiar to them. Therefore, the sub-contractor was well aware that Japanese contractors are very strict in safety management; and they communicated appropriately with the contractor, sharing the role of educating new entrants verbally. The company representative stated that through the implementation of Japanese-style safety management, safety awareness had been instilled in all workers and that safety had become the role and responsibility of each individual, accidents had decreased as a result, and machine handling had improved through regular inspections. All workers seemed to understand the effectiveness of Japanese-style safety management.



Standing signs informing the public about safe equipment at work



Simulations on safe working practices during morning

(Photo courtesy of Oriental Consultants Global Co., Ltd.)

It is difficult to determine which of the Japanese-style safety management efforts contributed more to the safe implementation of the project. However, the fact that the sub-contractor had a good understanding of the content and importance of Japanese-style safety management through previous JICA projects may have contributed to the safe implementation

<sup>41</sup> Demonstrations on the use of safety equipment and safe working practices were conducted during morning meetings, with a theme set for each meeting, to ensure that all workers were aware of the importance of safety equipment.

<sup>42</sup> Meetings were held to ensure communication within the workforce about work content, arrangements and problems, and to prevent accidents and disasters.

of the project. The sub-contractor also implemented Japanese-style safety management in non-Japanese contractor projects to the greatest possible extent. Furthermore, the company has a policy of recruiting young employees and training them over a long period, similar to Japanese companies, according to the representative. It is believed that Japanese-style safety management penetrated (or will penetrate) the company's employees through their experience on-site. Therefore, it is thought that Japan's long-standing support in the road sector has contributed to the penetration of Japanese-style safety management in Tanzania.

This project has mostly achieved its objectives. Therefore, effectiveness and impacts of the project are high.

### 3.4 Sustainability (Rating: ②)

#### 3.4.1 Policy and System

As indicated in Relevance, *Vision 2025*, a development plan with a long-term perspective, is still a valid development plan at the time of the ex-post evaluation. The latest national development plan, *FYDP III*, continues to indicate the need to reduce traffic congestion in Dar es Salaam. It is envisaged that the next strategy following the current transport sector strategy paper, *TSIP III*, will also be in line with *FYDP III*. Based on the above, consistency between the project and national and sector policies has been identified. It is assumed to continue until the near future (around 2025, the period covered by *FYDP III*).

#### 3.4.2 Institutional/Organizational Aspect

The implementing agency, TANROADS, was established in July 2000 and is responsible for the development and maintenance of the road network under the supervision of the Ministry of Works, Transport and Communications. The maintenance and management of the trunk roads in Dar es Salaam are the responsibility of the TANROADS Dar es Salaam Regional Office<sup>43</sup> (hereafter referred to as the 'DES Regional Office'). The DES Regional Office subcontracts the maintenance of roads and bridges to private contractors and patrols and supervises the work of subcontractors. Based on the reports of the subcontractors and the results of the DES regional office patrols, maintenance performance is recorded using the Road Maintenance Management System<sup>44</sup> (hereafter referred to as 'RMMS'). Furthermore, RMMS shows the required maintenance costs and the forecast of the required repair period based on the entered maintenance performance record (interview with the implementing agency). The DES Regional Office had 31 staff members at the time of the ex-post evaluation, and two bridge engineers were engaged in the maintenance management of the project. The staff shortage was not identified, and the number of staff is expected to be maintained in the future (interview with

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<sup>43</sup> At the time of the ex-post evaluation, there were 26 TANROADS regional offices in the country, with each office responsible for construction work and maintenance practices within its jurisdiction.

<sup>44</sup> Data management systems for road maintenance status

the implementing agency).

### 3.4.3 Technical Aspect

Manuals for road and bridge maintenance were in place and used daily in the DES Regional Office. In addition, staff had the necessary technical skills for bridge and road maintenance and management in Dar es Salaam City through internal and external training and participation in overseas training.<sup>45</sup> In addition, as mentioned earlier, at the time of the ex-post evaluation, two bridge engineers were engaged in the operation and maintenance of the project (interview with the implementing agency); no specific problems were identified concerning the technical level of TANROADS, DES Regional Office and the subcontractors (interview with the implementing agency).

### 3.4.4 Financial Aspect

The revenue and expenditure of TANROADS over the last five years is shown in Table 8. With the exception of 2019/20, there was no negative balance of payments, and the operation and maintenance cost was allocated to a certain extent (for 2019/20, the amount was negative due to outstanding payments (interview with the implementing agency)). On the other hand, the budget allocated to DES Regional Office has been decreasing in recent years<sup>46</sup> (see Table 9).

Table 8: TANROADS Revenue and Expenditure

(Unit: millions of Tshs)

	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Revenue	1,279,992,145	1,916,758,618	1,908,289,423	1,711,442,755	1,904,113,298
Expenditure	1,267,262,989	1,882,052,925	1,800,481,501	1,812,594,371	1,879,497,135
(Operation and maintenance cost)	441,801,960	454,524,365	483,453,461	495,794,532	609,757,300
Ratio of operations and maintenance cost to the total expenditure	35%	24%	27%	27%	32%
Balance	12,729,156	34,705,693	107,807,922	▲101,151,616	24,616,163

(Source: information provided by the implementing agency)

<sup>45</sup> Internal training included a two-week course on preventive maintenance and major repair management. As external training, participants attended a two-week technical course on safety conducted by the Engineer Registration Board. As overseas training, engineers from DES Regional Office participated in overseas training in India, South Korea, Sri Lanka and other countries.

<sup>46</sup> The reasons for the budget decrease could not be identified.

Table 9: Budget for TANROADS DES Regional Office

(Unit: millions of Tshs)

2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
31,218	31,517	31,517	26,619	26,823	27,383.39

(Source: implementing agency).

In terms of the maintenance and management cost, TANROADS as a whole was allocated about 40% of the required cost.<sup>47</sup> Thus, it was challenging to implement all the needed maintenance and repairs. Some maintenance and repairs were carried out based on priority, including at the DES Regional Office (interview with the implementing agency). Although the maintenance and management cost allocation was approximately 40% of the required amount, when repairs were needed that exceeded the annual budget, the necessary maintenance and repairs were carried out using emergency funds or borrowing from other sources. Thus, it seemed that the required budgetary measures were taken for repairs that would impede traffic (implementing agency interviews). In addition, 60% of the ‘Road Fund’ budget, which covers the cost of road maintenance and management, was allocated to TANROADS, which means that the budget was stable.<sup>48</sup>

However, some aspects were not well maintained, as described below under ‘Status of operation and maintenance’.

The flyover constructed during the project was classified and managed as a ‘road’ at the time of the field study for this evaluation (May 2022), influenced by the fact that it was the first flyover in Tanzania. Therefore, the allocated maintenance cost was also the maintenance cost for the ‘road’. However, the implementing agency has already addressed this issue, and in the financial year 2022/2023, the flyover would be classified as a ‘bridge’, as would the maintenance cost. RMMS would also have a new ‘bridge’ setting, which would be reflected in the maintenance plan, and the maintenance and management cost. Therefore, we would expect the situation to improve<sup>49</sup> (interview with the implementing agency).

Thus, the financial aspect of operation and maintenance of the project has some issues.

### 3.4.5 Environmental and Social Aspect

As stated in the ‘Impacts on the Natural Environment’ section above, TANROADS has not

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<sup>47</sup> In DES Regional Office, the allocation was also around 25% of the required budget. The maintenance budget for TANROADS was calculated by the RMMS for the required maintenance cost (unconstrained budget), and then each regional office allocated its own budget for repairs (constrained budget). There was a gap between the unconstrained and constrained budget, and there were budget constraints for bridge and road maintenance in TANROADS; TANROADS has indicated that it would like to increase the maintenance cost to 60% of the required amount in the future.

<sup>48</sup> 2021/2022 financial year. Based on information from the Tanzania Road Fund Commission website (<https://www.roadfund.go.tz/en>, accessed 2022.5.1).

<sup>49</sup> However, TANROADS was underfunded in terms of maintenance and management costs, which may not lead to significant improvements.

been able to conduct any environmental monitoring surveys on the project since its completion, but it will do it in the future (interview with the implementing agency).

#### 3.4.6 Preventative Measures to Risks

At the time of planning, it was planned that the BRT was to be constructed after the completion of the project on Nyerere Road, the location of the flyover. Because the BRT would be constructed between the two bridges, safety needed to be ensured during and after project implementation. At the time of the ex-post evaluation, the contract between the implementing agency, the consultant and the contractor for BRT on Nyerere Road had been signed, and construction was due to start. The contractor will prepare a traffic management plan that would not affect the operation of the intersection, including the flyover. This plan would be reviewed by the consultant and approved by TANROADS. The construction of the BRT will be carried out with consideration for the safety of the flyover (interview with the implementing agency and WB).

#### 3.4.7 Status of Operation and Maintenance

The local consultant confirmed the status of maintenance and management of the bridges and roads constructed during the project through on-site inspection.<sup>50</sup> As a result, the consultant confirmed that the bridges, roads and ancillary facilities were generally adequately maintained and managed and that there were no problems with vehicle and pedestrian movement.

However, several areas were identified as requiring maintenance and repair (see Table 10). In particular, (1) road markings at the intersection and (2) solar-powered active road studs play an essential role in ensuring the safety of vehicles and pedestrians and should be repaired as soon as possible.

Inspection of the bridges and the roads in the project area were carried out on a daily basis (three times per week). Surveys that required reports were also carried out monthly.<sup>51</sup> In addition, a specialised inspection of the bridge sections was carried out once a year, and reports were produced.<sup>52</sup> The results of these surveys were entered into RMMS and reflected in the maintenance plan, and where repairs were required, the DES Regional Office used subcontractors to carry out the repairs. The frequency of inspections and repairs on roads and bridge sections was largely as envisaged in the planning process, but the frequency of maintenance and repair of expansion joints and rubber bearings on bridge sections was lower than envisaged at the time of planning, being every year. The implementing agency expressed their willingness to improve in this (interview with the implementing agency).

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<sup>50</sup> Although records of maintenance and inspection of the bridges (flyover) and roads constructed by the project were not available, the evaluator reviewed the periodic road condition survey reports during the visit to the DES Regional Office and confirmed that the implementing agency had conducted periodic inspections and surveys.

<sup>51</sup> It was previously quarterly, but since March 2022, it has been monthly.

<sup>52</sup> At the time of planning, an inspection was envisaged for every six months.



Lawn between the bridges established during the project



Road markings (markings faded)

(Photo by the evaluator)

Table 10: Areas in need of maintenance and repair

(1)	Fading of road markings at the intersection
(2)	Some of the solar-powered active road studs installed at four locations, two on the east side and two on the west side of the flyover (near the start of the lane towards the flyover), were not functioning, and the light indicating the lanes was partially obscured.
(3)	Faulty night lighting (one location due to a faulty electrical system or faulty light bulbs)
(4)	A slightly curved road traffic sign due to vehicle collision (one location)
(5)	Minor corrosion or damage to part of the net fence.
(6)	Accumulation of rubbish in parts of the road drainage works (does not impair drainage function).

(Source: prepared by the evaluator based on on-site inspection)

Some minor issues have been observed regarding the financial aspect and the current status of the operation and maintenance system. As for the current status of the operation and maintenance system, there are good prospects for resolution. For the financial aspect, the prospect for improvement is low. Therefore, the sustainability of the project effects is moderately low.

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

##### 4.1 Conclusion

The project constructed the first flyover in Tanzania in the direction of Nyerere Road at the Tazara Intersection to create a grade separation; the project aimed to alleviate traffic congestion on Nelson Mandela Road (hereinafter referred to as ‘Mandela Road’) and Nyerere Road starting from this intersection. About relevance, the project was found to be consistent with the development plan of Tanzania and the development needs which promoted the development of the transport sector in Dar es Salaam, a critical economic hub in Tanzania. In terms of coherence, the project was consistent with Japan’s ODA policy, according to which infrastructure development is a priority area. The cooperation and coordination with other projects and support

within JICA were also as expected, and the results were confirmed, as well as with other donor projects, as expected. In light of the above, relevance and coherence were high. Regarding efficiency, all outputs were achieved as planned, the project cost was within the plan, and the project period slightly exceeded the plan, so the efficiency was high. Regarding effectiveness, degree of intersection saturation was significantly increased, average intersection transit time was reduced considerably on Nyerere Road, although not on Mandela Road, and Nyerere Road travel time was also significantly reduced when compared to the actual values. In addition, the impact of the project was also observed in terms of stabilising the livelihoods of low-income groups living in the outer-urban extension and improving safety within the intersection. Therefore, the effectiveness of the project's implementation was generally as planned, and effectiveness and impact were high. Regarding sustainability, while no issues were observed in policies and systems or in institutional/organizational and technical aspects, some issues were observed regarding financial aspects and the current status of the operation and management system; the sustainability of the project was 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

It is desirable to carry out repairs where repairs are needed. Repairs should be carried out as soon as possible, especially for the road markings that are fading and the solar-powered active road studs, which may have a negative effect on safe movement and driving.

### 4.2.2 Recommendations to JICA

None

## 4.3 Lessons Learned

Safety measures for works where safety measures are more important with the need to work at height or to control traffic on existing roads

During the construction period of the project, appropriate coordination was made between the implementing agency, TANROADS, the contractor and traffic police regarding traffic control. As a result, traffic control during the traffic management, when the existing roads were closed to traffic and traffic was secured by alternative routes, was properly implemented, and the severe traffic congestion was avoided. In addition, when traffic restrictions were implemented, such as changes to vehicle traffic lanes and right-turn prohibitions for large vehicles, information on the traffic restrictions was broadcast over the radio for several weeks before and after the restrictions were implemented. This is also considered to have contributed to easing traffic congestion. Furthermore, traffic police were deployed throughout the construction period, which was believed

to have contributed to the accident-free completion of the works and, thus, to the efficient implementation of the works. Ensuring safety is extremely important for construction projects that require work at height or that require traffic control on existing roads. Close coordination between stakeholders, as was done in this project, and the implementation of necessary safety measures and appropriate information dissemination to the public are essential for the safe implementation of construction works.

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

### 5.1. Performance

#### 5.1.1 Objective Perspective

The consultant took appropriate measures to diminish uncertainty in the costing process by having multiple persons in charge of verifying, comparing and reviewing the cost with similar projects, checking the costing documents by a third party and exchanging opinions with the contractor. During implementation, meetings with the contractor were held weekly and monthly, and meetings with the client and reports to JICA were held monthly. In addition, quality control meetings were held three times during the construction period with the client, JICA, the contractor and the consultant, and meetings were held as necessary when problems occurred, thus ensuring an appropriate system for supervision.

The JICA Tanzania Office and the Embassy of Japan in Tanzania lobbied the Tanzanian government on fuel tax for subcontractors who were not initially eligible for tax exemption and contributed to the approval of the exemption. The JICA Tanzania Office and the Embassy of Japan in Tanzania also assisted in resolving the issue of delays in fuel tax refunds, resulting in early refunds. Thus, the JICA Tanzania Office provided appropriate support to the consultants and the contractor in implementing the project.

### 5.2. Additionality

None