

Democratic Socialist Republic of Sri Lanka

Ex-Post Evaluation of Japanese ODA Loan Project
“Pro-Poor Eastern Infrastructure Development Project”

External Evaluator: Yasuhiro Kawabata,
Sanshu Engineering Consultant

0. Summary

The objective of the project was to enhance logistic efficiency in the Eastern Province and improve accessibility to neighboring provinces by widening and paving sections under National Roads A4 and A15 in the eastern coastal regions in Sri Lanka, thereby contributing to reconstruction of the regional economy and alleviate the economic gaps between provinces in the country. The project has been highly relevant to the development plans and needs of Sri Lanka, as well as Japan’s ODA policies. Thus, its relevance is high. Regarding the efficiency, the originally planned project (civil work) has been implemented as planned. Since the project cost was higher than planned and the project period was significantly longer than planned, therefore, efficiency of the project is low. Upon completion of the project, the travel time in the subject road section has been reduced by half and thus the project contributes to enhancement of logistic efficiency. Moreover, the traffic volume on the road sections has increased highly, by 8% per annum, and the project has contributed to reconstruction of the regional economy. Regarding the contribution (impact) by the project to economic reconstruction in the Eastern Province, 95% of interviewed people acknowledge that the business chances have been substantially or fairly increased. With respect to alleviation of economic disparity between regions, 88% of interviewed people note that the household income has been increased either substantially or fairly. Thus, the project has largely achieved its objectives, and the effectiveness and impact is high. No major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system, therefore sustainability of the project effect is considered high.

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

1. Project Description



Project Location



Kallady Bridge

1.1 Background

Because of the conflict, which had lasted for about thirty years, much infrastructure had been destroyed together with the numerous human damage in the Northern and Eastern Provinces. The share of Domestic Gross Product (DGP) by both provinces was lowered from 15% in 1980s to 4% in 1997. Thus, since the economical gap with other provinces was enlarged, the Sri Lankan government noted that the Northern and Eastern Provinces were the priority regions for development taking into account reconstruction of economy and assurance of peace. Roads and bridges in the Eastern province were constructed before independence (1948) and had design standards with narrower road width. Moreover, pavement surface had been severely deteriorated due to insufficient maintenance during the conflict time and it was further damaged by Tsunami and flooding due to the Great Sumatra-Andaman Earthquake, which occurred in end December 2004. Ampara and Batticaloa districts in the project area have abundant fishery resources, and Ampara is also a leading rice-producing area in the country. However, due to undeveloped road network, access for transporting agricultural products to larger markets was limited, and it was a bottleneck for development of regional economy.

Particularly, Eastern Province was most severely damaged by Indian Ocean Tsunami, and the economic gap was further enlarged. Thus, rehabilitation and reconstruction of infrastructure, which is fundamental for reconstruction of economic activities was considered to be a most urgently tackled agenda. Particularly, it was expected that development of roads would provide various effects including promotion of investment and development of regional industries, increase of employment opportunities outside communities, and enhancement of access to social services such as education and health.

1.2 Project Outline

The objective of the project was to enhance logistic efficiency in the Eastern Province and to improve accessibility to neighboring provinces by widening and paving sections under National Roads A4 and A15 in the eastern coastal regions in Sri Lanka, thereby contributing to reconstruction of the regional economy and alleviate the economic gaps between provinces in the country. The location of the project site is shown in Figure 1.



Source: Road Development Authority

Figure 1 Location of Project Site

Loan Approved Amount/ Disbursed Amount	4,460 million yen/4,459 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	March 2006/March 2006
Terms and Conditions	For civil work: Interest Rate: 0.75%, Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: General untied For consulting services: Interest Rate: 0.75% Repayment Period: 40 years (Grace Period: 10 years) Conditions for Procurement: General untied
Borrower / Executing Agency(ies)	Government of Democratic Socialist Republic of Sri Lanka/Road Development Authority (RDA) and Institute for Construction Training and Development (ICTAD)
Final Disbursement Date	May 2012
Main Contractor (Over 1 billion yen)	China Overseas Engineering Group CO. LTD. (China), State Development & Construction Corp. (Sri Lanka)
Main Consultant (Over 100 million yen)	Nippon Koei (Japan)/ Oriental Consultants (Japan)
Feasibility Studies, etc.	Feasibility Study (JICA: Emergency Development Study, March 2005)
Related Projects	Technical Cooperation: • JICA Construction Equipment Training Centre in Sri Lanka (1996 – 2001) Other International Organizations: • World Bank: Road Sector Assistance Project (2005), Sri Lanka Tsunami Emergency Recovery Program (2005) • Asian Development Bank: National Highways Sector Project (2005)

2. Outline of the Evaluation Study

2.1 External Evaluator

Yasuhiro Kawabata, Sanshu Engineering Consultant

2.2 Duration of Evaluation Study

Duration of the Study: July 2014-May 2015

Duration of the Field Study: September 13-28, 2014, December 7-20, 2014

3. Results of the Evaluation (Overall Rating: B¹)

3.1 Relevance (Rating: ③²)

3.1.1 Relevance to the Development Plan of Sri Lanka

In the “10-Year Development Framework”, which was developed based on the economic strategy stated in the former President’s (inaugurated in November 2005 for the first term) election manifesto, “Mahinda Chintana”, the following strategic priority sectors for promoting economic policies were selected: 1) Food security/increase of income of small scale farmers; 2) agriculture development aiming at converting to commercial agriculture; 3) development and improvement of sectors such as power, harbors, transport, communications and small/medium enterprises; 4) rural development and poverty alleviation; 5) enhancement of social services (education, health/medical, water supply and social security) to the lagged regions; 6) acquisition of foreign currency through tourism development and securement of employment; 7) promotion of trade and investment agreement; 8) continuous implementation of reconstruction of Northern and Eastern provinces damaged by Tsunami. Project objectives conform to the agendas 3), 4), 5) and 8) in the above mentioned strategic agendas. In the Framework, the road sector aimed at provision of transport services (including improvement of rural roads), which could meet the nation’s demand. (Source: 2007 Third party evaluation report by Ministry of Foreign Affairs of Japan (Evaluation Study Report for Sri Lanka))

In 2010, the revised version of “Mahinda Chintana” (“Future Vision”) was issued and it aimed at doubling the economic magnitude in 2010 by 2016 (GDP per capita shall be US\$4,000) through economic structural reforms. Simultaneously, it also aimed at achieving the well balanced economic development in order to avoid the enlargement of gap between urban and rural areas. Regarding the road sector, in Chapter 4 of the revised “Mahinda Chintana”, it is stated that the government would give priority to the improvement projects, in which the road network in Sri Lanka would be upgraded to good quality roads during the period of 2011-2020, since it was considered that improvement of roads is essential to integrate the nation and to achieve the politically stable status. In the “National Road Master Plan” (2007-2017), issued in 2007, widening and improvement of national roads was listed as one of priority agendas, cognizant of that development of road network connecting with all the economically growing hubs in the country is essential. Batticaloa in the project area was also one of

¹ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

² ③: High, ② Fair, ① Low

national level growth hubs.

On January 8, 2015, the Presidential Election was undertaken, and Mr. Maithripala Sirisena inaugurated as a new president on the following day, January 9, 2015. However, new development policies on the highway/road sector have not been issued (as of March 2015).

As mentioned above, at appraisal and at ex-post evaluation, the implementation of the project conforms to the development policies of the Sri Lankan Government.

3.1.2 Relevance to the Development Needs of Sri Lanka

Roads and bridges in the project area, Eastern Province (three districts including Trincomalee, Batticaloa and Ampara with a total population of 1.5 million) were constructed during the colonial period (became independent in 1948) and had design standards with narrower road width. Moreover, pavement surface had been severely deteriorated due to insufficient maintenance during the conflict time. It was further damaged in some road sections by Tsunami and flooding due to Great Sumatra-Andaman Earthquake occurred in 2004. Eastern Province has abundant agricultural and fishery resources. However, since access to major larger markets was limited due to undeveloped road network, it was a bottleneck for development of regional economy. Thus, widening and paving the national roads and improvement of bridges in the eastern coastal regions in Sri Lanka was considered to be urgently addressed agenda in order to achieve economic reconstruction in Eastern Province and redress the economic gap between regions.



National Road A4 at Addalachchena
Before project



National Road A4 at Addalachchena
After project

(Picture provided by Oriental Consultants Co., LTD.)

In Sri Lanka, a road is the most important transport mode, and 90% of passengers and 98% of cargoes are transported by roads as of 2009. The total road length, including national roads, provincial roads, and rural/agricultural roads is about 110,000 km, and

ratios of paved roads of national and provincial roads are 99% and 70%, respectively. However, ratio of national roads with good surface condition as of 2009 is only 40%. (The government has a plan aiming at increasing the ratio up to about 60% by 2015.) Under such condition, at the ex-post evaluation stage, the government considers that it is essential to improve and develop road networks and make efforts to enhance the “quality” of roads in order to cope with growing economic condition and likely increasing traffic demand. Simultaneously, the government is keen to develop human resources and enhance the institutional capacity of the relevant road agencies. (Source: Chapter 4 of the revised “Mahinda Chintana”)

Even at the ex-post evaluation stage, the government considers that it is essential to make efforts to enhance the “quality” of roads in order to cope with traffic demand. Thus, the project aiming at enhancing access through road improvement conforms to the development needs.

3.1.3 Relevance to Japan’s ODA Policy

According to the Medium-Term Strategy for Overseas Economic Cooperation Operations, which was effective at the appraisal time, the followings were listed up as the priority agendas for assistance to Sri Lanka: 1) assistance for reconstruction of mainly Northern and Eastern Provinces considering the balance of regions and ethnic groups; 2) development of economic infrastructure targeting the sustainable economic development led by the private sector; 3) fostering industries; and 4) assistance to poor. In the 2006 Country Assistance Strategy for Sri Lanka, rehabilitation and reconstruction of roads in regions damaged by Tsunami was considered to be a priority sector together with development of road networks connecting between Colombo Metropolitan Area and regions, and alleviation of traffic congestion in the capital region. Thus, the project conforms to the assistance policies at the appraisal stage.

Accordingly, the project has been highly relevant with the Sri Lankan development plan and needs, as well as Japan’s ODA policies. Its relevance is therefore considered high.

3.2 Efficiency (Rating: ①)

3.2.1 Project Outputs

The original and actual output of the project is shown in Table 1.

Table 1 Output (Original and Actual)

	Project Scope at Appraisal Stage	Project Scope at Project Completion
Civil Work	<ul style="list-style-type: none"> • Reconstruction and widening of roads (Akkaraipattu – Trikkandimadu section with a total length of about 98km) • Bridge construction in parallel to Kallady Bridge (291m), which is located in the central area of Batticaloa 	<p>As planned</p> <p>Among the whole sections, about 10km sections have 4 lanes and the remaining 88km has 2 lanes. The pavement structure consists of 50 mm asphalt pavement on top of 20 cm base course on the existing surface, which adjusts the existing uneven surface. Repair/reconstruction of 136 culverts or small bridges.</p> <p>As planned</p> <p>New construction of a 2-lane bridge in parallel to the existing 1-lane bridge. The type of superstructure is box-girder and that of substructure is reinforced concrete pier. The type of foundation is pile.</p>
Consulting Services	<ul style="list-style-type: none"> • Review of bidding documents and designs • Construction supervision • Recommendation and assistance in maintenance and road safety aspects • Monitoring of safeguard issues • Monitoring of assistance activities for employment of graduates from vocational training • Baseline survey <p>Foreign experts: 70.0M/M Local experts: 449 M/M Local assistants: 1,062 M/M</p>	<p>Almost as planned</p> <p>Review of bidding documents and designs was deleted from the scope of work. Since construction of Kallady Bridge was dropped from the original contract and rebid during the project implementation, assistance in tendering activities was added to the scope of work. The baseline survey was not undertaken.</p> <p>Foreign experts: 100.35M/M Local experts: 482.92M/M Local assistants: 1,173.68M/M</p>
Vocational Training	<ul style="list-style-type: none"> • Planning training program on operation of construction equipment and maintenance skills • Selection of trainees • Coordination of local governments and regional communities • Undertaking training (668 participants) • Assistance for employment 	<p>As planned</p> <p>In 2007 and 2008, 668 staff took vocational training to 16 training modules (increased by 2 modules from the original plan)</p>

Source: JICA documents, and Interview survey with the executing agencies

Note 1: Originally, each civil work (through ICB) and vocational training was to be procured in one package.

Review of bidding documents and designs was originally included as one of scope of work under the consulting services. However, in order to expedite the implementation of the project, it had been completed with the separately arranged funds (a consultant was directly recruited by JICA) before the construction work commenced. Other consulting assignments were undertaken during the project implementation. However, since it was delayed to coordinate on the implementation arrangements between the executing agency and the consultant, and the proper timing was missed, the baseline survey, which was to be undertaken to examine the impact by the project after completion of the project, was not carried out.

The vocational training, which was one of project components was aimed at enhancing

operational sustainability of Institute for Construction Training and Development³ (ICTAD) by establishing an organizational structure, strengthening the relationship with industry and promoting the business activities. Regarding vocational training, appropriate subjects were selected from the prospectus, which was prepared by ICTAD every year, and ICTAD recruited trainees from government agencies, local governments and private construction companies and conducted the training. About 70% of trainees are government staffs and the remaining 30% are employees of private industries (contractors). Most of training subjects are learning of operating skills of various construction equipment, and some staffs, who were involved in the maintenance work at Road Development Authority (RDA) District Offices also participated in the training program.



Congestion at Kallady Bridge
Before project



Kallady Bridge
(Left bridge is an old bridge)
(Picture provided by Oriental Consultants Co., LTD)

3.2.2 Project Inputs

3.2.2.1 Project Cost

The estimated project cost at appraisal was 5,691 million yen, of which the Japanese ODA loan was 4,460 million yen. The actual project cost was 5,870 million yen, of which the Japanese ODA loan was 4,459 million yen. The actual project cost was higher than planned, and is equivalent to 103% of the planned cost.

³ Established in 1986 aiming at enhancing the efficiency and competitiveness of the construction industry in Sri Lanka. Main business services are human resource development in the construction industry, training for skill up of construction workers, establishing technical standards and others. Construction Equipment Training Center under ICTAD was founded by the Japanese Grant, and the capacity building program was undertaken under the JICA Technical Cooperation scheme during the period from 1966 to 2001.

Table 2 Comparison of Project Cost (Planned and Actual)

(Unit: million yen)

Category	Planned					Actual				
	ODA loan (foreign)	Local currency		Total		ODA loan (foreign)	Local currency		Total	
		Own fund	ODA loan	Total	ODA Loan		Own fund	ODA loan	Total	ODA Loan
• Civil work	3,462	0	0	3,462	3,462	1,644	326	2,233	4,203	3,876
Price escalation	62	0	0	62	62	-	-	-	-	-
Contingency	353	0	0	353	353	-	-	-	-	-
• Consulting services	446	0	0	446	446	272	0	206	478	478
• Vocational training	34	0	0	34	34	33	0	0	33	33
• Land acquisition	0	56	0	56	0	0	0	0	0	0
• Management cost	0	523	0	523	0	0	293	0	293	0
• Tax	0	652	0	652	0	0	791	0	791	0
• Interest during construction	103	0	0	0	103	72	0	0	72	72
Total	4,460	1,231	0	5,691	4,460	2,021	1,410	2,439	5,870	4,459

Source: JICA documents

Note: Summation of rows and lines does not necessarily match due to rounding numbers.

Exchange rates: at appraisal 1 US\$ =111 yen, 1 US\$ =100 Rupee, 1 Rupee=1.11 yen

average during implementation (2007-2013) : 1 Rupee=1.26 yen

Price escalation: foreign currency 1.3%/year, local currency 0.0%/year

Contingency: Civil work 10%, Consulting services 5%

Cost base year: October 2005

Main reasons for cost increase are as follows:

- 1) Since the construction schedule was substantially delayed due to poor performance of a contractor after the project commenced, construction of a bridge (Kallady Bridge) was dropped from the original contract, and rebidding was conducted. Then, a newly awarded contractor continued construction of the remaining work of bridge construction. (Even after the loan was closed, work of an incomplete bridge construction was continued and the bridge was open to traffic in September 2013.)
- 2) Since the beam span of Kallady Bridge was long (48m), installation of beams needed to be separately given to a specialized contractor.
- 3) Piling work at sites with adverse foundation condition (soft ground) was extremely tough and resulted in cost increase.
- 4) During the project implementation (2007-2013), Japanese yen depreciated and the exchange rate became from 1 Rupee = 1.11 yen to 1 Rupee = 1.26 yen (in average).



National Road A15 in Batticaloa
Before project



National Road A15 in Batticaloa
After project
(Picture provided by Oriental Consultants Co., LTD)

3.2.2.2 Project Period

The originally planned project period was 43 months from March 2006 (signing of the Loan Agreement) to September 2009 (civil work completion). The actual project period was 91 months from March 2006 (signing of the Loan Agreement) to September 2013 (completion of a bridge construction), or equivalent to 212% of the plan. Thus, the project period was significantly longer than planned. The consulting services commenced in November 2007 and ended in November 2013.

Table 3 Comparison of Project Period (Initially Planned and Actual)

	Planned (at the Loan Agreement signing)	Actual
Selection of a consultant	March 2006 – January 2007	March 2006 – October 2007
Consulting services	February 2007 – October 2009	November 2007 – November 2013
Land acquisition	January 2006 – December 2006	n/a
Preparation for bidding	January 2006 – July 2006	March 2006–March 2007 (road reconstruction and widening)
Bidding and contact	August 2006 – March 2007	October 2009– November 2009 (bridge construction)
Civil work	April 2007 – September 2009 (Reconstruction of roads and bridge construction was planned to be implemented simultaneously.)	December 2007– October 2010 (road reconstruction and widening) April 2010– September 2013(bridge construction)
Vocational training	June 2006 – December 2007	Implemented in 2007 and 2008

Source : JICA documents

Note 1: The originally planned defect liability period after the work completed was from October 2009 to September 2010.

Note 2: The actual defect liability period after the work completion was from January 2011 to December 2011 on the road reconstruction/widening work and from September 2013 to September 2014 on the bridge construction.

Main reasons for extension of the project period are as follows:

- 1) Selection of a consultant was delayed by about 9 months (more time was needed to secure clearance during the internal process)
- 2) At the time for preparation of bidding documents (in 2006), as security around the project sites was deteriorated, and the field reconnaissance for identifying quarries and borrow pits could not be implemented as planned, delay of preparation of bidding documents occurred.
- 3) As mentioned previously, since the remaining work of bridge construction was continued by a new contractor selected through rebidding, the project period for the whole civil work was delayed for about 48 months.
- 4) In the urban 4-lane sections (about 10km), design changes and succeeding additional work such as installation of additional drainage were undertaken.

The project cost was higher than planned, and the project period was significantly longer than planned. Therefore, efficiency of the project is considered as low.

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

Economic Internal Rate of Return (EIRR) of the Project calculated at the appraisal stage was 12.7%. Regarding the EIRR at the ex-post evaluation stage, since relevant data on costs and benefits needed to calculate the EIRR was not provided by the executing agency, EIRR are not recalculated.

3.3 Effectiveness⁴ (Rating: ③)

3.3.1 Quantitative Effects (Operation and Effect Indicators)

At the appraisal stage, as an operational indicator, daily traffic volume (vehicles/day in PCU⁵) and as an effect indicator, reduction of travel time (million Rupees/year) were established.

⁴ Sub-rating for Effectiveness is to be put with consideration of Impact.

⁵ passenger car unit

(1) Daily Traffic Volume and Travel Time

Table 4 Daily Traffic Volume and Travel Time

(Unit: Vehicles/day in PCU)

Indicators	Baseline	Target	Actual		
	2005	2010	2009	2013	2014
	at appraisal	1 Year After Completion (Note 1)	under implementation	Completion Year	1 Year After Completion
Indicator 1: Traffic volume (Notes 2 & 3) • Daily traffic : 5km North of Batticaloa along A15 route	No traffic count data	Not established	No traffic count data	No traffic count data	15,400
• Daily traffic: 23km South of Batticaloa along A4 route	4,150	Not established	4,920	8,190	8,510
Indicator 2: Reduction of travel time (minutes) (Notes 4 & 5)	100	Not established	50	50	45

Source: JICA documents, Responses to the Questionnaire (information provided by RDA Planning Department)

Note 1: Originally planned completion date: September 2009, Actual completion date: September 2013

(Opening of Kallady Bridge). Regarding the actual values, year 2014 is defined as “1 Year After Completion” counting from the actual completion date.

Note 2: Regarding “Indicator 1: Traffic volume”, traffic counting stations for baseline data at the appraisal stage (in 2005) were Kalmunai and Kattankudi along A4 Route. However, since then traffic counts have not been undertaken at these locations. The information available at the post evaluation stage is the traffic volume actually counted at two locations (5km North of Batticaloa along A15 route, and 23km South of Batticaloa along A4 route). The location of current counting stations differs from the location at the appraisal stage (Kalmunai and Kattankudi). Since comparison between actual volumes and planned (projected volume) is not appropriate, the planned (projected) traffic volume is not shown in the table.

Note 3: Actual traffic volume provided by RDA Planning Department is the daily traffic counted on a specific day and converted to PCU.

Note 4: Regarding “Indicator 2: Reduction of travel time”, at the appraisal stage, reduction of travel time was to be measured in term of million rupees per year. In order to quantify the impact on the reduction of travel time in the monetary term, it is needed to collect the information and data on the following items: traffic volume by type of vehicle, time value of drivers/passengers and cargo type/volume of cargo hauled and others. Since it was difficult to collect the information and data on these items, reduction of travel time was examined in term of time (minutes). (Information was provided by RDA Planning Department)

Note 5: Measured travel time is the average travel time by a passenger car for the section between Batticaloa and Karativu with a total length of about 50km. The number for 2013 is the travel time before Kallady Bridge was completed in September 2013. (Information was provided by RDA Planning Department)

The daily traffic volume at 23km south of Batticaloa along A4 Route was almost doubled in nine years from 2005 to 2014 (growth rate is 8%/year). The traffic volume at 5km north of Batticaloa along A15 Route is 15,400 vehicles/day as of 2014, which is considered high. The reason for high volume is partly that the location is in the urban area.

Regarding reduction of travel time (the average travel time by a passenger car for the section between Batticaloa and Karativu with a total length of about 50km), it was reduced from 100 minutes before the project to 45 minutes after the project, resulting in reduction by almost half.

3.3.2 Qualitative Effects

As qualitative effects by the Project, the following three items were expected.

1) Improvement of transport efficiency

According to the RDA Batticaloa and Akkaraipattu District Offices, compared to the situation before the project, since the smooth driving on the paved roads was secured, the travel time has been substantially reduced, and damage and repairs of vehicles caused by rough roads before the project were also reduced.

2) Improvement of access to other provinces

The travel time to reach Colombo from Batticaloa via National Road Route A15, A11, and A6, which is the shortest route, was reduced by about 10 minutes. However, in terms of improvement of access to other provinces, the reduced time is only about ten minutes among the average travel time of about 7 hours, and thus contribution of the project is limited.

3) Activation of regional economy

Because of restoration of security in the project targeted regions, and improvement of roads by the project, the investment to the subject region including the tourism related development has tended to be increased.

In order to verify the qualitative effects by the project (improvement of transport efficiency, improvement of access to other provinces and activation of regional economy), the beneficiary survey⁶ was undertaken.

Results of Beneficiary Survey:

1) Improvement of transport efficiency

The survey result on reduction of travel/commuting time to the commonly visited sites is shown in Figure 2 and that on alleviation of traffic congestion is shown in Figure 3.

⁶ Number of samples: total 100 (road users and residents along the project road; government employees (38%), private company employees (25%), businessman (company executives, 21%), self-employed (4%), housewife (5%), others (7%); male (68%), female (32%); method: interview with a Questionnaire

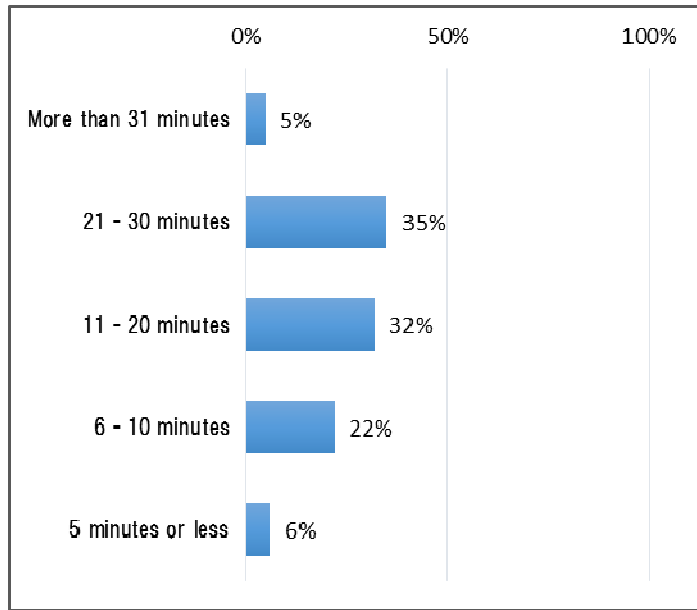
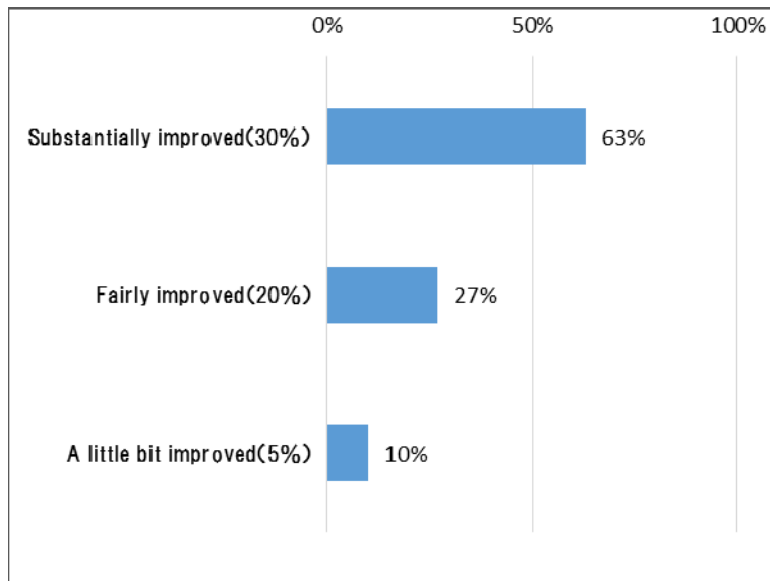


Figure 2 Reduction of Travel/Commuting Time



Note: Numbers in () show the level alleviated.

Figure 3 Alleviation of Traffic Congestion

Regarding reduction of travel/commuting time, road users and residents along the road recognize that the travel time was reduced by about 17 minutes in average.

With respect to contribution to alleviation of traffic congestion by improvement of the project road, about 60% of respondents recognize that it was “substantially” improved.



National Road A15 at Trikkandimadu
Before project



National Road A15 at Trikkandimadu
After project

(Picture provided by Oriental Consultants Co., LTD)

2) Improvement of access to other provinces

Regarding improvement of access to the economic centers in other provinces (e.g. Anuradhapura in the North Central Province), about 67% of respondents recognize contribution of the project.

3) Activation of regional economy

The survey result on activation of regional economy is shown in Figure 4.

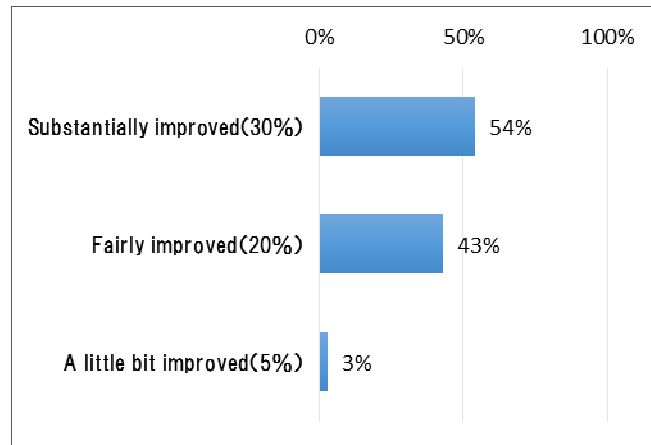


Figure 4 Contribution to Activation of Regional Economy

With respect to contribution to activation of regional economy by improvement of the project road, about 97% of respondents recognize that it was “substantially” or “fairly”.

3.4 Impact

3.4.1 Intended Impacts

In order to verify contribution of the project to improvement of regional economy and rectification of economic gap between regions, the relevant information and data on fluctuation of land value, increase of investment, transition of population, promotion of tourism development and average household income was collected. Results of analysis are shown in Tables 5-8.

1) Land value

Fluctuation of the land value in Batticaloa, which is a core city in the project site was examined and the following results became apparent.

Table 5 Fluctuation of Land Value in Batticaloa (average value)

(Unit: Rupee/m²)

Year	2006	2010	2011	2012	2013
Land Value	6,900	23,500	27,500	27,500	27,500

Source: Market value (RDA Batticaloa District Office)

Since the conflict in Sri Lanka, which commenced in 1983 was almost settled in mid-2007 in the Eastern Province and the project also started, the land value went up abruptly. (According to the beneficial survey, about 85% respondents clearly admit that contribution of the project is “substantially” or “fairly”). The current land value in Batticaloa is about four times of that of “before the project” .

2) Increase of Investment

The trend of investment to the project area is shown in Table 6.

Table 6 Trend of Investment in the Project Area

Year	2010	2011	2012	2013
Number of projects	5	6	10	15
Invested amount (million Rupee)	250	400	600	800
New employment (persons)	1,750	3,000	6,000	8,000

Source: RDA Batticaloa District Office

Investment to the project area has been steadily increasing year by year.

3) Transition of population

Transition of population in Batticaloa is shown in Table 7.

Table 7 Transition of Population

(Unit: 1,000 people)

Year	2006	2010	2011	2012
Population	581	598	588	586

Source: RDA Batticaloa District Office

There is no substantial fluctuation in population of Batticaloa. The population in 2011 and 2012 has been reduced from that in 2010. The reason for this reduction is that farmers evacuated to the urban area during the conflict returned to their original inhabited place.

4) Promotion of Tourism Development

According to RDA Batticaloa District Office, from around 2010 after security was restored and roads were improved, the tourism related development started in Passikudah located at about 25km north of Batticaloa and has shoaling beaches with calm waves. As of 2014, hotels with a total of 2,000 rooms including five 5-star hotels have been completed, and it is expected that the number of rooms would be expanded to 4,000 by 2016. Moreover, it is expected that tourists will be transported by air from Colombo. An airport is being constructed in Batticaloa and is expected to be open in the first half year.

5) Average Household Income

Transition of the average household income in Batticaloa is shown in Table 8.

Table 8 Transition of Average Household Income in Batticaloa

(Unit: Rupee)

	2006/07	2009/10	2012/13
Average in Sri Lanka	26,286	36,451	45,878
Average in Batticaloa	21,032	22,844	25,483
Ratio to the national average (%)	80	63	56
Average in Eastern Province	20,811	23,922	30,676

Source: Household Income & Expenditure Survey 2012/13, 2009/10, 2006/07
(Department of Census and Statistics)

Note 1: Income in Eastern Province is the lowest in Sri Lanka (2012/13)

Note 2: Ratio to the national average = Average in Batticaloa/ Average in Sri Lanka

In the past, the income in Eastern Province has been the lowest. Even now this situation is unchanged, and conversely the discrepancy between regions has been widened. As development of an expressway network progresses and travel time to/from Colombo is shortened in the future, promotion of regional economic activities will be induced.

Results of Beneficiary Survey:

Regarding contribution of the project to reconstruction of the regional economy in Eastern Province and rectification of the economic gaps between regions in the country, the following results became apparent through the beneficiary survey.

1) Increase of business chances

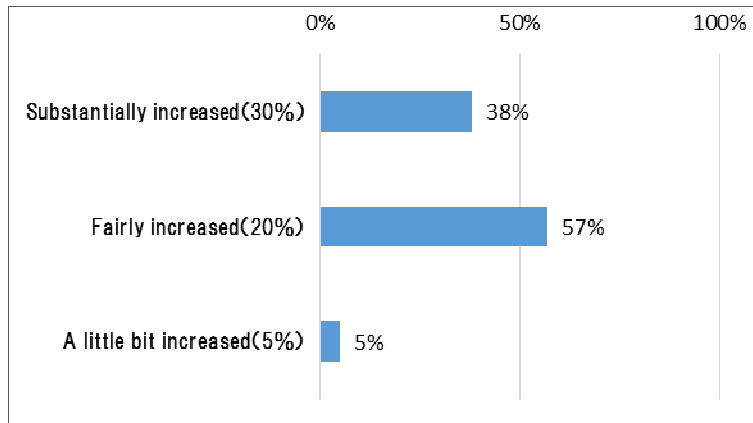


Figure 5 Increase of Business Chances

Regarding contribution to increase of business chances by improvement of roads, about 95% of respondents recognize that the project contributed “substantially” or “fairly”.

2) Increase of household income

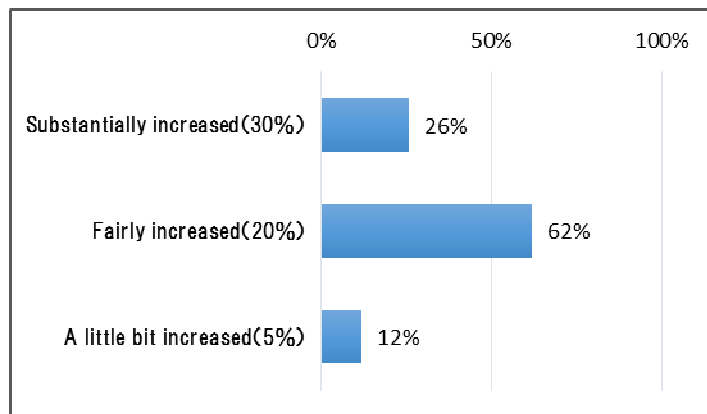


Figure 6 Increase of Household Income

Regarding contribution of the project to increase of household income, since business chances were increased by improvement of roads, 88% of respondents recognize that the contribution was either “substantially” or “fairly”. However, since

the average annual growth rate of Sri Lanka for the past four years (2010-2013) was 7.5% and the growth rates in other regions were also high, contribution has not reached rectification of the economic gaps between regions.

3.4.2 Other Impacts

(1) Impacts on the natural environment

According to the 「JBIC Guidelines for Safeguard Verification, issued in April 2002」, the project was classified as Category B⁷, taking into account the sector characteristics, project characteristics, and geographical features. According to the domestic legislation in Sri Lanka, preparation of an Environmental Impact Assessment (EIA) was not required, and implementation of the project along the coast had been cleared by Coastal Conservation Bureau at the appraisal time. Exhausted gas, noise and dust were considered to be environmental issues during the construction stage, and thus, watering and appropriate management of construction equipment were to be implemented together with the environmental monitoring.

It is reported that during the implementation stage, watering was frequently undertaken in order to reduce dust. It is also reported that regarding issues on exhausted gas, noise, and vibration, engines of the construction machine were switched off when it is not used. According to the executing agency, the consultant conducted the environmental monitoring as planned during the project implementation. As the major project component is improving and paving the existing roads, deterioration of the natural environment from what it was has not been observed after the project was completed.

(2) Land Acquisition and Resettlement

The estimated land area to be acquired at the appraisal stage was about 1 ha, and compensation was to be made according to the domestic legislation. However, resettlement was not foreseen under the project. Since the improvement and widening work were actually undertaken within the existing right-of-way during the project implementation, land acquisition and resettlement did not take place.

(3) Other Positive and Negative Impacts

At the appraisal stage, any other impacts were not foreseen. However, as the old rough roads were improved to paved roads, black spots, where traffic accidents

⁷ Category B: Applied to the project, in which unfavorable impacts to be made to the environment and community are considered smaller compared with Category A (applied to the project, in which seriously unfavorable impacts to be made to the environment and community).

frequently occur due to higher speed are noted after the pavement was completed. One of black spots is the location with a sharp curve, which is located at about 5km north of Akkaraipattu. Particularly, during the three-month period between May and July 2014, 10 accidents (including 7 fatal accidents) occurred. Hence, the District Office immediately painted surface markings and installed guard rails, delineators, and traffic signs (speed limit with 40km/hour), and did whatever technically is applicable. As a result, for the four-month period from August to November 2014, no traffic accident has occurred.

Upon completion of the project, the travel time in the subject road section has been reduced by half and thus the project contributes to enhancement of logistic efficiency. Moreover, the traffic volume on the road section has increased highly, by 8% per annum, and the project has contributed to reconstruction of the regional economy. From the beneficiary survey, it was confirmed that the travel time of the road users and residents along the roads was reduced by about 17 minutes in average. With respect to contribution to alleviation of traffic congestion, about 90% of respondents recognize that it was “substantially” or “fairly” improved. Regarding the contribution (impact) by the project to economic reconstruction in the Eastern Province, 95% of interviewed people acknowledge that the business chances have been “substantially” or “fairly” increased. With respect to alleviation of economic disparity between regions, people note that it was fairly improved. However, since the average annual growth rate of Sri Lanka for the past four years (2010-2013) was 7.5% and the growth rates in other regions were also high, contribution has not reached rectification of the economic gaps between regions.

The project has largely achieved its objectives, and thus the effectiveness and impact is high.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

After the project was completed, Road Development Authority (RDA) is responsible for operation and maintenance of the project roads. RDA is in charge of development, operation and maintenance of national roads consisting of trunk roads (A class) and major roads (B class) among all the road network. The total road length under their management as of August 2010 is about 12,000 km. In the RDA Headquarters, Maintenance Management and Construction Department is responsible for maintenance of national roads, and RDA has Provincial Offices in 9 provinces and

District Offices in 21 locations under the Provincial Offices. Maintenance of the project road (98 km) is undertaken by both Batticaloa and Akkaraipattu District Offices under the Eastern Provincial Office. Batticaloa District Office is responsible for the section between Trikkandimadu and Kalmunai with a total length of about 73km and Akkaraipattu District Office is responsible for the remaining 25 km section between Kalmunai and Akkaraipattu. Number of staffs assigned to both District Offices is as shown in Table 9.

Table 9 Number of Staffs of District Offices

(Unit: persons)

Position	Batticaloa	Akkaraipattu
Chief Engineer	1	1
Executive Engineer	1	2
Technical Officer	3	4
Work Supervisor	9	11
Labor Supervisor & Laborers	about 60	about 110
Total	about 75	about 130

Source: District offices

Regarding the number of staff assigned, Batticaloa District Office considers that the number of staff is not necessarily sufficient since the current regular skilled staffs would be gradually replaced by contract staffs according to the government policy, and vacant positions would not be filled. However, since vacant positions will be filled by contract staffs in sequence, the number of staffs will soon reach the fixed number. On the other hand, Akkaraipattu District Office considers that the number of staffs assigned is appropriate to the current work load for maintenance.

The current organizational setup for maintenance work is the standard one of the RDA District Offices, and appropriately established. The number of staffs assigned is also appropriate.

3.5.2 Technical Aspects of Operation and Maintenance

In order to be an “Engineer” who is an above the management level engineer, he/she must have educational qualification above university graduate level, and needs to acquire the qualification as an “engineer⁸” accredited by Institute of Engineers. Engineers (Chief Engineers and Executive Engineers) at both Batticaloa and Akkaraipattu District Offices have the “Engineer” qualification. It is reported that the technical skill and knowledge of technical staffs such as Technical Officers and Work Supervisors is sufficient to undertake the general maintenance work without any

⁸ Equivalent to the “Professional Engineer” in the US and also to an equivalent qualification such as a certified public accountant.

difficulties.

Maintenance work has been implemented according to the RDA's standard regulations, "Standard Specifications for Construction and Maintenance for Roads and Bridges – November 2008". Staffs take training on other manuals and guidelines such as "Code of Conducts" and "Guidelines for Safety" about once a year. Some of technician level staffs were sent to the training on "Improvement of Operational Skills for Construction Equipment", undertaken at ICTAD under the project (vocational training).

Since engineers and technicians with qualified technical skills are assigned for the maintenance work, and undertakings of training and development of manuals are properly done, no particular problem is noted. Thus, there is no technical issues to sustain the effectiveness of the project.

3.5.3 Financial Aspects of Operation and Maintenance

The annual budget and actual expenditure of the whole RDA, and the budget and actual expenditures for maintenance of roads and bridges are shown in Table 10.

Table 10 Annual Budget and Actual Expenditure of the Whole RDA, and the Budget and Actual Expenditures for Maintenance

(Unit: million Rupee)

	2012		2013		2014	
	Budget	Actual	Budget	Actual	Budget	Actual
Whole RDA	132,795	131,970	126,623	125,319	136,205	114,870
Maintenance	5,961 (4.5%)	5,961 (4.5%)	5,150 (4.1%)	5,150 (4.1%)	8,000 (5.9%)	4,180 (3.6%)

Source: RDA Planning Department

Note 1: Actual numbers for 2014 are as of end of August

Note 2: Numbers in () are the ratio of the maintenance budget and actual expenditures against the whole RDA budget and actual expenditures, respectively.

Note 3: Maintenance budget includes that for routine maintenance, periodic maintenance, structural improvement, and safety facilities maintenance, but not for major repairs and reconstruction.

In order to secure financial resources for road maintenance, the Sri Lankan government established "Road Maintenance Trust Fund" in December 2005, and it has collected 1 Rupee per liter from sales of gasoline and 0.5 Rupee per liter from sales of diesel. However, the sale price of gasoline as of November 2014 was about 160 Rupee per liter, and the collection ratio is low. (the gasoline tax in Japan is about 40% of the sale price.) The collected amount from the Road Maintenance Trust Fund reaches about 1.5 billion Rupees every year, and its share among the maintenance budget (about 8 billion Rupees) for 2014 is about 19%. The maintenance budget for 2014 is

about 155% of that of previous year.

It is reported that the required amount for maintenance of national roads under the RDA management is in average 380,000 Rupees/km/year (180,000 Rupees/km/year for routine maintenance, 200,000 Rupees/km/year for periodic maintenance). The maintenance budget allocated to both Batticaloa and Akkaraipattu District Offices and actual expenditures spent for road sections including the subject project road sections are shown in Tables 11 and 12.

Table 11 Expenditures for Maintenance Work of Batticaloa District Office

(Unit: million Rupees)

	2013		2014	
	Budget	Actual Expenditure	Budget	Actual Expenditure
Routine maintenance	85.0	117.38	90.0	53.36
Periodic maintenance	105.0	18.77	100.9	82.00
Structural improvement	29.0	47.71	45.1	57.01
Safety facility maintenance	32.0	7.32	20.0	13.11
Total	251.0	191.18	256.0	205.57 (246.68)

Source: RDA Maintenance & Management Department

Note 1: The total road length managed by Batticaloa District Office is 266 km.

Note 2: Actual expenditures of 2014 is the sum covered up to end of October.

Note 3: Numbers in () are converted to 12-month basis.

Table 12 Expenditures for Maintenance Work of Akkaraipattu District Office

(Unit: million Rupees)

	2013		2014	
	Budget	Actual Expenditure	Budget	Actual Expenditure
Routine maintenance	81.0	53.30	90.0	43.51
Periodic maintenance	105.0	46.44	180.0	109.91
Structural improvement	18.0	4.01	130.0	63.50
Safety facility maintenance	32.0	13.67	20.0	9.26
Total	236.0	117.42	420.0	226.18 (271.42)

Source: RDA Maintenance & Management Department

Note 1: The total road length managed by Akkaraipattu District Office is 380 km.

Note 2: Actual expenditures of 2014 cover up to end October.

Note 3: Numbers in () are converted to 12-month basis.

For the past two years (2013 and 2014), both District Offices could not spend all

the budget allocated to the offices. Since widening and/or reconstruction of roads under the project has been recently completed, maintenance work required is mainly simple general routine and periodic work. It is considered that the budget for the maintenance work has been properly allocated. Regarding the ancillary and additional works mentioned under the next “Current Status of Operation and Maintenance”, the budget for these works is separately allocated from the other budget item (for improvement work).

It is considered that the budget for the maintenance work has been properly allocated. No major problems are observed in the financial aspects of the operation and maintenance system.

3.5.4 Current Status of Operation and Maintenance

Four years have passed since roads were widened and/or paved under the project. From the field ocular inspection, it was noted that there were no particular sections where the road surface was deteriorated, and thus the pavement condition seemed to be generally satisfactory. It is likely that the routine and periodic maintenance work aimed at maintaining the current condition including the following work items has been appropriately implemented.

Routine maintenance: mowing grass on shoulders, patching cracks, repair of pot holes, cleaning drainage ditches, repainting surface markings, repair of traffic signs, etc.

Periodic maintenance: patching/repair pavement surface, maintenance of shoulders, painting of guardrails, repair of traffic signs, improvement of drainage, etc.

Since the major project scope was widening and pavement of the existing roads, ancillary and additional work due to increase of the pavement height was required after the project was completed, and the following work has been continued by using the maintenance budgets of local government and RDA. (Note: At the planning stage, improvement such as putting base course was not considered).

- Reconstruction of curves, which fits with the elevated pavement height was required. (in some sections), because existing curves did not serve its original function (stopping vehicles, and serving as drainage facility) after the project was completed,
- Drainage ditches installed in the urban area were not originally covered.

Installation of covers, additionally needed due to safety reasons (to prevent dropping of pedestrians)

- Expansion of drain ditches/channels to the appropriate locations, needed in some locations. (in order to drain rain water to appropriate locations), because the drain system from installed ditches was not fully planned,

In addition, since some road sections are flooded during rainstorm, rehabilitation work to raise the pavement height by embankment, is needed.

Regarding the infrastructure constructed under the project, from the field ocular inspection during the field investigation, no major crack nor damage on pavement surface were observed. Yet, improvement and additional work, which could not be sufficiently addressed during the rehabilitation work under the project has been undertaken by own funds.

In light of the above, no major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system, therefore sustainability of the projects effect is considered high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of the project was to enhance logistic efficiency in the Eastern Province and improve accessibility to neighboring provinces by widening and paving sections under National Roads A4 and A15 in the eastern coastal regions in Sri Lanka, thereby contributing to reconstruction of the regional economy and alleviate the economic gaps between provinces in the country. The project has been highly relevant to the development plans and needs of Sri Lanka, as well as Japan's ODA policies. Thus, its relevance is high. Regarding the efficiency, the originally planned project (civil work) has been implemented as planned. Since the project cost was higher than planned and the project period was significantly longer than planned, therefore, efficiency of the project is low. Upon completion of the project, the travel time in the subject road section has been reduced by half and thus the project contributes to enhancement of logistic efficiency. Moreover, the traffic volume on the road sections has increased highly, by 8% per annum, and the project has contributed to reconstruction of the regional economy. Regarding the contribution (impact) by the project to economic reconstruction in the Eastern Province, 95% of interviewed people acknowledge that the business chances have been substantially or fairly increased. With respect to alleviation of economic disparity

between regions, 88% of interviewed people note that the household income has been increased either substantially or fairly. Thus, the project has largely achieved its objectives, and the effectiveness and impact is high. No major problems have been observed in the institutional, technical and financial aspects of the operation and maintenance system, therefore sustainability of the project effect is considered high.

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 frequently observed that the number of serious traffic accidents (fatal and injured) increases after a road was improved. Prevention of traffic accidents cannot be resolved solely by a road management authority and it should be addressed comprehensively from 3E aspects (Engineering, Enforcement, and Education). Regarding the Engineering aspect, a road management authority needs to improve the black spot from technical and engineering viewpoints. With respect to the Enforcement aspect, the traffic police needs to strengthen enforcement. On the Education aspect (education and enlightenment), education and enlightenment to drivers and pedestrians by traffic police and school management are essential. It is recommended to establish an organization to tackle prevention of traffic accidents and prepare a strategy for prevention of traffic accidents by working cooperatively among relevant parties including road administrators, police, school authorities, health administration authorities, and insurance companies.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

(1) Review of Needs for Implementation of Additional Work due to appropriate Design Changes during the project implementation

Since the project was also intended to assist urgently in rehabilitating the damage caused by Tsunami occurred in December 2004, the scope of improvement work was in principle widening, and laying base course on top of the existing roads. However, since the existing surface height was raised, as mentioned above, under Current Status of Operation and Maintenance, ancillary/additional work (raising curves, installation of covers on drainage channels, expansion of drainage ditches) was required in some sections. Even though these problems were not foreseen at the planning stage, these problems were apparently observed during the implementation stage.

Since work needed to resolve the problems is related to the safety, and it is not

practical to undertake these work under the normal maintenance budget, which is not necessarily sufficient after the project was completed, JICA needed to advice to the executing agency that appropriate additional work should be implemented by making design changes during the implementation.

Comparison of the Original and Actual Scope of the Project

Item	Original	Actual
1. Output		
1) Civil Work	<ul style="list-style-type: none"> • Reconstruction of roads and widening (Akaraipattu – Trikkandimadu section with a total length of about 98km) • Bridge construction in parallel to Kallady Bridge (291m), which is located in the central area of Batticaloa 	<p>As planned</p> <p>Among the whole sections, about 10km sections have 4 lanes and the remaining 88km has 2 lanes. The pavement structure consists of 50 mm asphalt pavement on top of 20 cm base course on the existing surface, which adjusts the existing uneven surface. Repair/reconstruction of 136 culverts or small bridges.</p> <p>As planned</p> <p>New construction of a 2-lane bridge in parallel to the existing 1-lane bridge. The type of superstructure is box-girder and that of substructure is reinforced concrete pier. The type of foundation is pile.</p>
2) Consulting Services	<ul style="list-style-type: none"> • Review of bidding documents and designs • Construction supervision • Recommendation and assistance in maintenance and road safety aspects • Monitoring of safeguard issues • Monitoring of assistance activities for employment of graduates from vocational training • Baseline survey <p>Foreign experts: 70.0M/M Local experts: 449 M/M Local assistants: 1,062 M/M</p>	<p>Almost as planned</p> <p>Review of bidding documents and designs was deleted from the scope of work. Since construction of Kallady Bridge was dropped from the original contract and rebid during the project implementation, assistance in tendering activities was added to the scope of work. The baseline survey was not undertaken.</p> <p>Foreign experts: 100.35M/M Local experts: 482.92M/M Local assistants: 1,173.68M/M</p>
3) Vocational Training	<ul style="list-style-type: none"> • Planning of training program on operation of construction equipment and maintenance skills • Selection of trainees • Coordination of local governments and regional communities • Undertaking of training (668 participants) • Assistance for employment 	<p>As planned</p> <p>In 2007 and 2008, 668 staff took vocational training to 16 training modules (increased by 2 modules from the original plan)</p>
2. Project Period	March 2006 - September 2009 (43 months)	March 2003 - September 2013 (91 months)
3. Project Cost		
Amount paid in Foreign currency	4,460 million yen	2,021 million yen
Amount paid in Local currency	1,231 million yen	3,849 million yen
Total	5,691 million yen	5,870 million yen
Japanese ODA loan portion	4,460 million yen	4,460 million yen
Exchange rate	1 Rupee = 1.11 yen (as of October 2005)	1 Rupee = 1.26 yen (average between 2007 and 2013)