

Indonesia

Ex-post Evaluation of Japanese ODA Loan Project  
“Sumatra East Coast Highways”

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Field Survey: June 2009

1. Outline of the ODA Loan Assistance



Map of the project site



Project target road  
(Seputih Banyak – Manggala Section)

1.1 Background

Sumatra Island has an area of 482,000 km<sup>2</sup>, stretching 1,700km from north to south and 300km from east to west, which is about 1.25 times larger than the land area of Japan. In 1995, the total population of Sumatra Island was about 40 million; about 20 percent of the total population of Indonesia. The trunk roads in Sumatra Island have been well developed with the Java Island and Trans Sumatra Highway already serving the people of Sumatra, which has a total length of 2,500km starting from Bakauheni port, located at the south end of Sumatra, and ending in Banda Aceh, located at the north end. The road passes through the central mountain ranges and through major cities like Padang in the center and Medan in the north. However, this Trans Sumatra Highway does not directly connect with other major cities in the east side of Sumatra such as Dumai, Jambi, and Palembang. Therefore, the preparation of a master plan for a new trunk road development to directly link other major cities in the east side of Sumatra was supported by JICA, and “Development Study of Coastal Roads on the East Coast of Sumatra”<sup>1</sup> was prepared in 1992.

<sup>1</sup> Development Study of Coastal Roads on the East Coast of Sumatra proposed the widening and improvement of the existing national highways and provincial roads for the existing 1,900km from Medan in the north to Bakauheni in the south. For some sections new road construction such as for bypass roads was proposed.

Whilst the east coast area of Sumatra has a favorable climate condition and is rich in natural resources, the area also has great potential for plantation agricultural development, paddy cultivation and energy resource development. Lampung Province, the southern part of Sumatra, where the project target road is located includes Bakauheni port operating ferry transport between Sumatra Island and Java Island. Lampung Province is, therefore, a strategic point for the land transport and distribution of goods in Sumatra.

## 1.2 Project Objective

The objective of this project was to upgrade and improve a part of the Sumatra East Coast Highway in order to cope with the increasing traffic volume, thereby contributing to the development of the Island of Sumatra.

## 1.3 Borrower / Executing Agency

Government of Indonesia / Directorate General of Highways (Bina Marga), Ministry of Public Works

## 1.4 Outline of the Loan Agreement

Approved Amount / Disbursed Amount	6,652 Million Yen / 4,763 Million Yen
Exchange of Notes / Loan Agreement	January 27, 1998 / January 28, 1998
Terms and Conditions - Interest Rates - Repayment Period - Grace Period - Conditions of Procurement	2.7% p.a. (Consultant portion: 2.3% p.a.) 30 years 10 years General Untied
Final Disbursement Date	February 2007
Main Contractor (Over 1 billion yen )	PT ADHI KARYA (Indonesia), SSANGYONG (South Korea), PT. HUTAMA KARYA (Indonesia)-PT. WIJIYA KARYA (Indonesia) (JV)
Main Consultant (Over 100 million yen)	Pacific Consultants International (Japan)
Feasibility Study, etc. (F/S)	Development Study of Coastal Roads on the East Coast of Sumatra, JICA, (1992)

## 2. Evaluation Results (Rating: B)

### 2.1 Relevance (Rating: a)

This project has been highly relevant with the Indonesia's national policies and development needs at the times of both appraisal and ex-post evaluation; therefore its relevance is high.

#### 2.1.1 Consistency with Indonesia's Development Policy

At the time of appraisal, the policy goals for the road sector in the Sixth Five-Year National Development Plan (1994-1998, REPELITA VI) were more efficient road transportation and smoother traffic between regions by the extension of road networks, better road conditions, and the improvement of service levels. Also, a reinforcement plan for trunk roads (1989)<sup>2</sup> included improvement of the road surface and road widening for the trunk road networks in Sumatra and Java regions as one of its main priority projects. This project was planned based upon the Development Study of Coastal Roads on the East Coast of Sumatra (total length of the target road: 1,900km) in 1992.

At the time of the ex-post evaluation, in the Medium-Term National Development Plan (RPJM 2004-2009), the government considered road transportation as one of the most important means of transport in Indonesia, and regarded road transportation as an important area for passenger and commodity transport in national development. This transport mode played an essential role in passenger and freight traffic. Also, one of the targets of the Road and Bridge Improvement Program under RPJM is the development of primary arterial roads in national economic centers, including Sumatra Island. The



Figure 1: Sumatra East Coast Highway and Trans Sumatra Highway

<sup>2</sup> This plan was prepared based upon the study conducted by Bina Marga in 1989. In this plan, in order to deal with an increase of heavy vehicles, the government proclaimed the policy to upgrade the pavement standard from 8t to 10t axle load across total 9,000km sections, out of which 5,000km were scheduled to be improved by the end of fiscal year 1997.

Development Study of Coastal Roads on the East Coast of Sumatra, including the target sections of the project, has been promoted by the Indonesian government and the priority of the project is still high.

#### 2.1.2 Consistency with Development Needs

At the time of appraisal, the Trans Sumatra Highway (total length 2,500km) was already in existence running through the north and south of Sumatra Island, but it did not directly link major cities in the east coastal area such as Dumai, Jambi, and Palembang. This was a problem for inter-city networks. Also, there had been less development of road infrastructure in the east coastal area in Sumatra leaving problems such as missing links and unpaved road surfaces in many sections which in turn produced a disincentive for the development of land and natural resources. Furthermore, since there was a ferry port in the Ketapang area in Lampung Province – the gateway between Sumatra and Java – frequent traffic congestion occurred in Lampung Province and the neighboring areas due to the large traffic volume of trucks and large vehicles travelling between Sumatra and Java. It was estimated that traffic volume would increase with the development of the area in the future.

At the time of ex-post evaluation, one of the objectives of the Strategic Plan of Lampung Province (2004-2009) was to increase the quality and quantity of infrastructure services such as roads, irrigation, energy, and telecommunications. The plan sets a target to increase good road conditions to 80% of the 2,400km of provincial roads and to support the acceleration of good national road conditions to 90% of the 851km of national roads. The main industries in Lampung Province, which is a project target area, are plantation agriculture such as rubber and sugarcane production and aqua culture. The project target road plays an important role as a transportation route for these primary commodities. In addition, the transport volume by ferry between Bakauheni port in Sumatra and Merak in Java has increased year by year, and the traffic volume in Lampung Province is expected to grow in the future. Therefore, the development needs of the project are still high.

#### 2.2 Efficiency (Rating: c)

Both project period and cost extended the planned value respectively, therefore efficiency of the project is low.

##### 2.2.1 Outputs

The outputs of the project were the improvement of roads and the construction and

replacement of bridges in the Ketapang – Manggala section, which was a part of the target section of JICA’s Development Study of Coastal Roads on the East Coast of Sumatra. The project outputs actually realized were almost the same as those planned except for an extension of 18km road length. This extension was caused by: (i) design change of a part of the Jepara – Seputih Banyak section (CA-2) passing through the town center of Sukadana to a bypass road detouring the town center due to the difficult land acquisition negotiation with the residents in Sukadana, and (ii) design change of a part of the Seputih Banyak – Manggala section (CA-2) due to the geographical condition. However, 24km of the road, which consists of 22.7km in the Ketapang – Jepara section and 1.3km at the Jepara - Seputih Banyak section, out of a total 186.1km in the Ketapang – Manggala section was not yet completed as of May 2009. A percentage of completion was therefore 87% (see Table 1).

Table 1: Comparison of Planned and Actual Outputs

Planned Outputs (at Appraisal)	Actual Outputs (at Ex-Post Evaluation)
(1) Road improvement (CA-1) Ketapang – Jepara: 68km (CA-2) Jepara – Seputih Banyak: 50km (CA-3) Seputih Banyak – Manggala: 50km Total: 168km	(1) Road improvement (CA-1) Ketapang – Jepara: 69.5km (CA-2) Jepara – Seputih Banyak: 60.1km (CA-3) Seputih Banyak – Manggala: 56.5km Total: 186.1km  (note) Total 24km of the road, consisting of 22.7km in the Ketapang – Jepara section and 1.3km in the Jepara - Seputih Banyak section was incomplete as of May 2009. The entire section is scheduled to be completed in December 2009.
(2) Consulting services - Foreign consultants: 75 M/M - Indonesian consultants: 314 M/M	(2) Consulting services - Foreign consultants: 104 M/M - Indonesian consultants: 528 M/M

The major reason for the incomplete project outputs was the delay in the land acquisition process. Construction works for the incomplete section were ongoing at the time of the ex-post evaluation, and the executing agency expects to finalize the pending land acquisition processes by August 2009 and to complete the construction of the unfinished section by December 2009, resulting in the full operation of the entire section. Since the expiry date of the Japanese ODA loan agreement for this project had already passed in February 2007, the project cost for the incomplete section has been financed by the Indonesian government. Details regarding the delay in the land acquisition process are explained in “2.2.2 Project period” and “2.4.6 Social impact relating to the resettlement of people and land acquisition”.

Regarding the consulting services, the actual work volume was 632 M/M (104 M/M

for foreign consultants and 528 M/M for Indonesian consultants) against the planned 389 M/M (75 M/M for foreign consultants and 314 M/M for Indonesian consultants). This was equal to 1.6 times of the planned work volume. The main reason for this increase was the extra work volume caused by the detailed design for an additional 94.9km road connecting with the project target section and including the following three sections: (i) the Ketapang – Bakauheni section (17.3km), (ii) the Manggala – Pasir section (39.9km), and (iii) the Pasir - Pematang Panggang section (37.7km)<sup>3</sup>. This additional consulting service was included in the project scope by the request of the executing agency.

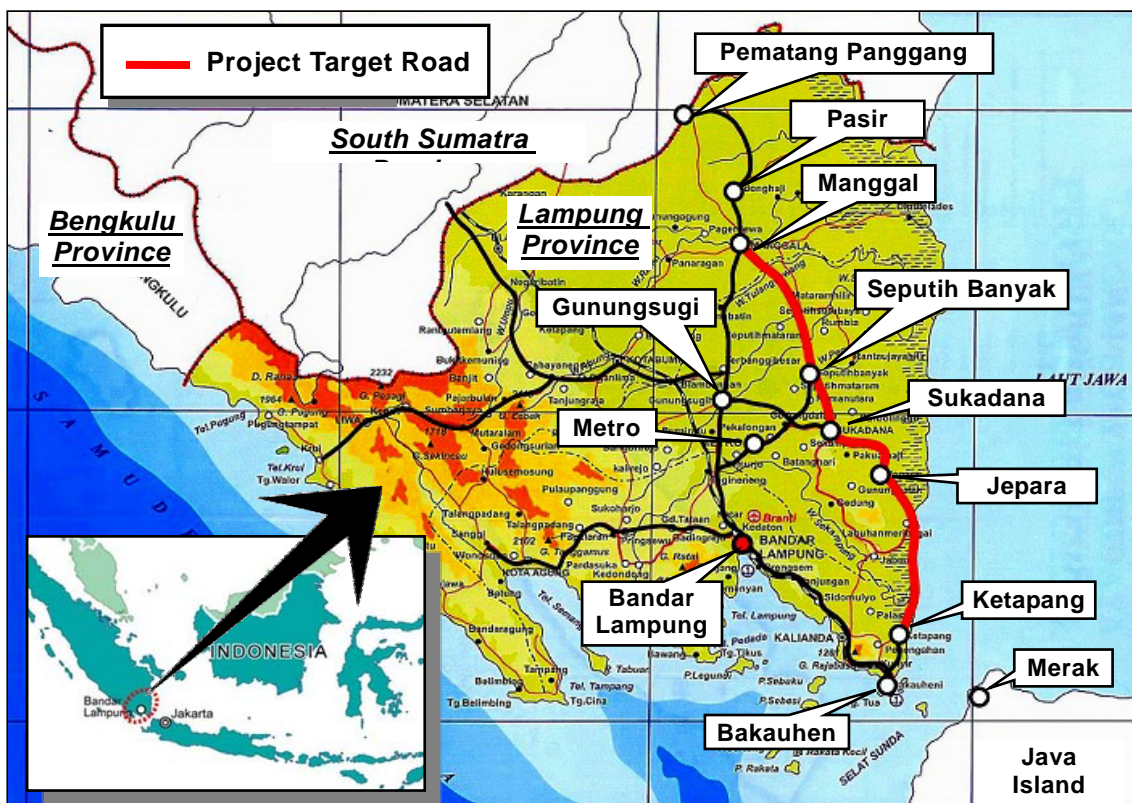


Figure 2: Map of Project Target Section

### 2.2.2 Project period

The actual project period was 12 years from January 1998 to December 2009 against a planned period of 5 years and 5 months from November 1997 to March 2003, which was equal to 222% of the planned period. In December 2004, the expiry date of the loan agreement for the project was extended another two years to February 2007 as project completion by February 2005, the original expiry date of the loan agreement, was

<sup>3</sup> These three additional sections were a part of the target section of the Development Study of Coastal Roads on the East Coast of Sumatra, but they are not part of the target section of the project. Whilst the improvement work of (i) the Ketapang – Bakauheni section had already been completed with Indonesian government funds, neither land acquisition nor the improvement work of (ii) the Manggala – Pasir section and (iii) the Pasir – Pematang Panggang section had been implemented as of May 2009.

unlikely at that time. Despite this, the entire section of the project had still not been completed by February 2007 due to the delay in land acquisition. In this ex-post evaluation, the effectiveness and impact of the entire target section of the project are principally examined but not of the individual completed sections. Therefore, the actual project period is deemed to last from the signing of the loan agreement to the completion of the entire target section of the project which is scheduled to be completed in December 2009.

The major reasons for the delay were: (i) a prolonged procurement process caused by higher tender prices against the estimated project cost<sup>4</sup>, (ii) additional time spent on detailed design for the additional sections<sup>5</sup>, and (iii) delay in construction works caused by low performance of the contractor in charge of the Jepara - Seputih Banyak section<sup>6</sup>. The most important reasons, however, were (iv) the delay in the preparation of budget for the land acquisition by the local governments and the prolonged land acquisition process due to difficult negotiations with land owners.

The Seputih Banyak – Manggala section (CA-3) (56.5km) was completed in January 2005. Regarding the Ketapang – Jepara section (CA-1) (69.5km), the contract period of the Indonesian contractor for CA-1 expired in July 2006 and the civil works for the incomplete section of 22.7km were implemented under a new contract with another Indonesian contractor (new contract period: March 2008 – December 2009). Regarding the Jepara – Seputih Banyak section (CA-2) (60.1km), the contract period of the Korean contractor also expired in March 2006 and the civil works for the incomplete section of 1.3km were implemented under a new contract with another Indonesian contractor (new contract period: March 2009 – September 2009).

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<sup>4</sup> During the tender process for the contractors, the following problems arose such as: (i) the lowest bid prices exceeded the estimated budget sum and (ii) there was deficit in the document submitted by one of the lowest bidders. As a result, 10 month delayed.

<sup>5</sup> In addition to the change of detailed design for a part of the project target road, the detailed design for the following three additional sections linked to the project road such as: (i) the Ketapang – Bakauheni section (17.3km), (ii) the Manggala – Pasir section (39.9km), and (iii) the Pasir - Pematang Panggang section (37.7km) was included to the project scope, which required an additional period.

<sup>6</sup> Although the construction work at Sukadana Bypass was available since the commencement of the contract date, the implementation of its construction work was delayed since the contractor of CA-2 gave the first priority on the cost, thus mobilization of engineers and workforces, procurement of construction equipments and materials, and financial arrangement were delayed.



Ketapang – Jepara Section  
(at Pasir Sakti)



Ongoing road improvement work  
(at the 2-3 km south from Jepara)



Ongoing road widening work  
(at the 2-3 km south from Jepara)

### 2.2.3 Project cost

The actual project cost was 11,627 million yen (of which the Japanese ODA loan was 4,763 million yen) against the planned cost of 8,869 million yen (of which the Japanese ODA loan was 6,652 million yen), equal to 131% of the planned cost and 72% of planned loan amount (see Table 2). The first reason for the cost-overrun was the increase in construction costs caused by the prolonged project implementation period. The second reason was the increase in land acquisition costs. The project cost disbursed by February 2007 was financed by the Japanese ODA loan, but the remaining project cost for the 24km incomplete section was financed by the Indonesian government.

Table 2: Comparison of Planned and Actual Project Cost

(Unit: million Yen)

	Plan	Actual		
		Before project implementation period (until Feb. 2007)	After project implementation period* (Feb. 2007 – Dec. 2009)	Total
1. Civil work				
Package CA-1	n.a.	1,899	1,289	3,188
Package CA-2	n.a.	1,656	1,150	2,806
Package CA-3	n.a.	1,898	755	2,653
Sub-total	6,377	5,453	3,194	8,647
2. Contingency	447	-	-	-
3. Consulting services	759	710	0	710
4. Land acquisition	738	499	907	1,406
5. Tax and duties	548	545	319	864
Total	8,869	7,207	4,420	11,627
(of which Japanese ODA loan)	(6,652)	(4,763)		(4,763)

Source: Bina Marga, Ministry of Public Works

Note 1): \*The actual project cost under the finance of the Indonesian government includes the estimated project cost to December 2009.

Note 2): Since there was a time lag between the progress of the construction work for each target section and payment to the contractor, even after the construction work was completed for some sections before February 2007, the final payment disbursed late after February 2007.

### 2.3 Effectiveness (Rating: a)

In the target section, a significant increase in traffic volume as well as a saving in travelling time and an improvement in average speed (velocity) were realized. Also,



positive impacts such as the promotion of commodity distribution and the movement of people and regional development were observed. Therefore, in general, this project has largely produced the planned effects, and its effectiveness is high.

### 2.3.1 Increase in Traffic Volume

Although traffic volume data for the project target section of pre-project implementation could not be collected, the Annual Average Daily Traffic (AADT) of the three sections increased 6 to 18 times between 2005 and 2008. Likewise the Passenger Car Unit (PCU<sup>7</sup>) of the three sections increased 4 to 18 times in the same period (see Table 3). For the purpose of reference, this ex-post evaluation survey conducted a 24-hour sample traffic count in Jepara. As shown in Table 4 below, the surveyed traffic volume was 16,675 in AADT and 10,304 in PCU. The ratio of motorcycles was 81% of the total traffic, implying that the use of motorcycles was promoted by the widening of the road and the improvement of the road surface under the project. The traffic volume of the three sections commonly increased after 2007 when over 80% of the entire target section was completed, and particularly there was an outstanding increase in the traffic volume of the Jepara – Seputih Banyak section (CA-2). The possible reasons for this are that the Jepara – Seputih Banyak section is located in the populated area including Jepara and Sukadana towns and more and more local people became to use this target road as their community road. It is supported by the result of the sample traffic count that about 80% of the traffic consisted of motorcycles. Whilst from the viewpoint of the role of the target road as an alternative distribution route in the entire Lampung Province, the utilization of the target road for this purpose is still limited because a part of the section is still incomplete.

Table 3: Traffic Volume

Section	km	2005	2006	2007	2008	Growth rate vs. 2005
<b>AADT (No. of vehicle/day/year)</b>						
(CA-1) Ketapang – Jepara	69.5	2,566	2,679	9,984	15,488	604%
(CA-2) Jepara – Seputih Banyak	60.1	1,180	1,224	13,860	21,609	1,831%
(CA-3) Seputih Banyak – Manggala	56.5	1,180	4,638	4,834	7,537	639%
<b>PCU (PCU/day/year)</b>						
(CA-1) Ketapang – Jepara	69.5	1,818	1,900	5,644	8,756	482%
(CA-2) Jepara – Seputih Banyak	60.1	727	754	8,642	13,473	1,853%
(CA-3) Seputih Banyak – Manggala	56.5	727	1,525	2,944	4,590	631%

Source: Bina Marga, Ministry of Public Works

<sup>7</sup> PCU (Passenger Car Unit) is a transport engineering term to convey the heterogeneous traffic concept (i.e. passenger cars) as opposed to the homogeneous traffic concept (i.e. trucks, buses, passenger cars, motorcycles, etc) by using a conversion factor. In Bina Marg, the Ministry of Public Works adopts the conversion factors for each type of vehicles as 1.0 for passenger car, 0.5 for motorcycles, and 1.3 for heavy vehicles.

According to JICA's Development Study of Coastal Roads on the East Coast of Sumatra (1992), the estimated traffic volume of the target section in 2010 was estimated as 18,000 PCU/day. If the actual PUC of each section in 2008 in Table 3 is compared with the estimated PCU in 2010, the achievements for each section are 48%

in the Ketapang – Jepara section (CA-1), 75% in the Jepara – Seputih Banyak section (CA-2) and 26% in the Seputih Banyak – Manggala section (CA-3)<sup>8</sup>.

However, considering the fact that a part of the project section was still incomplete as of April 2009, assessment of the degree of achievement in traffic volume at the time of ex-post evaluation should be made some reservations. It is expected that after the completion of the entire target section in December 2009, when travelling from Bakauheni port in Lampung Province to Palembang in South Sumatra Province, it will be faster and more convenient to use the east coast detour route of Bakauheni – Jepara – Seputih Banyak – Manggala than the existing route of Bakauheni – Bandar Lampung – Gunungsugi – Manggale which is usually congested. Since the number of cargo trucks and vehicles for the distribution of goods is expected to increase in the project area, it is also estimated that there will be an increase in the traffic volume in the target section of the project. It is therefore possible that the target traffic volume of 18,000 PCU/day will be achieved by the end of 2010.

Meanwhile, according to statistical data of traffic volume at major roads in Lampung Province in 2007, the highest traffic volume (AADT) in Lampung Province was 23,000 vehicles/day at Tanjungkarang, which is located in the center of Bandar Lampung, capital city of the province. When comparing this AADT with the AADT for Jepara – Seputih Banyak which were 13,860 vehicles/day in 2007 and 21,609 vehicles/day in 2008, there is no large gap between these two AADTs. Particularly after 2007 when improvement work for the majority of the target section was progressing, a dramatic expansion in the traffic volume was observed. Hence it can be concluded that the project has brought about the expected outcome to some degree.

Table 4: Result of Sample Traffic Count

1. Date	20-21 April 2009 (24 hours)
2. Place	Inside Jepara
3. Traffic Volume	16,675 vehicle/day 10,304 PCU/day
4. Break-down	Motorcycles: 13,449 (81%) Jeeps, sedans, wagon cars: 1,855 (11%) Small wagon cars: 191 (1%) Mini-buses, large buses: 123 (0.7%) Trucks: 1,057 (6.3%)

Source: Ex-post evaluation team.

<sup>8</sup> The information regarding the traffic volume estimation for each target section for each year was not available in the appraisal documents. Therefore, the estimated traffic volume of the target section in 2010, which is 18,000 PCU/day, described in the JICA's Development Study was used as a reference to measure the achievement of the traffic volume.

However, there are concerns that there is no progress on the planned improvement of the Manggala – Pasir - Pematang Panggang section (77.6km) which directly links with the target section, and this may have a negative effect on the sustainability of the project outcome. The Indonesian government must continue to make efforts to realize the improvement of the above section<sup>9</sup>.

### 2.3.2 Savings in travelling time and the improvement of velocity

Although exact data regarding travelling time and velocity in the target section before and after project implementation is lacking, according to an interview survey by people from the executing agency who were directly in charge of project implementation, the travelling time in the Ketapang – Manggala section shortened from 435 minutes (7 hours 15 minutes) to 191 minutes (3 hours 11 minutes), and velocity improved from 26 km/hour to 60 km/hour comparing before and after project implementation (see Table 5). It can be seen that the cars were able to travel the target section in less than half the time after the project implementation<sup>10</sup>. Considering the fact that part of the target section was still incomplete as of April 2009, it can be expected that the positive effects of saving of travelling time and the improvement of velocity will be further increased after the completion of the entire project target section in December 2009.

Table 5: Travelling Time and Velocity

Section	km	Before Project		After Project (April 2009)	
		Travelling time (minutes)	Velocity (km/hour)	Travelling time (minutes)	Velocity (km/hour)
(CA-1) Ketapang – Jepara	70	120	35	87	48
(CA-2) Jepara – Sukadana	30	45	40	50	36
(CA-3) Sukadana – Manggala	90	270	20	54	100
Total	190	435	26	191	60

Note: Travelling time and velocity before the project implementation are based on the results of an interview survey to the executing agency.

<sup>9</sup> The detailed design of this section was already completed by the consulting services of the project. Although the periodic maintenance such as patching, cleaning of the drainage facilities, and overlay has been carried out by the executing agency using the Indonesian government's own fund and the financial assistance of the Asian Development Bank (ADB), a part of this section is still badly damaged due to the heavy traffic exceeding 8t of the design weight of the road. The executing agency anticipates that the land acquisition of this section will be easier than that of the project (i.e. the Ketapang-Manggala section) since the majority of land is owned by the state-owned plantation company and many immigrants from Java island live along this section. However, the improvement work of this section has not yet started due to a difficulty in arrangement of the project budget.

<sup>10</sup> The possible reasons why the travelling time and velocity of the Jepara – Sukadana section are not improved after the project implementation are: (i) the dramatic traffic volume expansion to 18 times of this section might compensate the expected positive effects on the travelling time and velocity of this section, and (ii) the lower car speed is enforced at many locations of this section than other two sections since this section is located in the populated area including Jepara and Sukadana towns.

### 2.3.3 Results of Economic Internal Rate of Return (EIRR)

The Economic Internal Rate of Return (EIRR), based upon a cost-benefit analysis at the time of appraisal, was 18.2%. The re-calculated EIRR adapting the same preconditions (i.e. cost: project cost and operation and maintenance cost; benefit: saving of vehicle’s operation cost and time saving cost) of cost-benefit analysis at the time of appraisal was 8.4% at the time of ex-post evaluation<sup>11</sup>. It is difficult, however, to identify the reasons why the re-calculated EIRR at the time of ex-post evaluation is lower than the original EIRR at the time of appraisal due to lack of detailed information on the original data. Possible factors for the lower re-calculated EIRR might be associated with the increase in project cost, the difference in the unit costs for saving of vehicle’s operation and time saving, and the difference in the traffic volume estimation between the appraisal and ex-post evaluation. But it is not certain.

### 2.3.4 Satisfaction level of the project beneficiaries

According to the results of a satisfaction survey of local residents, local transporters, and local businesses, 44.9% of respondents (79 respondents) said that they were “Very much satisfied”, 39.2% of respondents (69 respondents) answered “Yes, satisfied to some extent”, 10.2% of respondents (18 respondents) said “Not much satisfied”, and 5.1% of respondents (9 respondents) replied “Not satisfied at all”. Considering the fact that more than 80% of the total respondents answered either “Very much satisfied” or “Yes, satisfied to some extent”, it can be assumed that the project met the needs of the beneficiaries.

Table 6: Satisfaction Level of Beneficiaries

Satisfaction level	Local Residents		Local Transporters	Local Businesses	Total	
	Male	Female			No. of Responses	%
Very much satisfied	11	9	31	28	79	44.9%
Satisfied to some extent	9	5	25	30	69	39.2%
Not much satisfied	1	0	10	7	18	10.2%
Not satisfied at all	0	0	1	8	9	5.1%
Do not know	0	0	1	0	1	0.6%
Total	21	14	68	73	176	100%

Source: The results of the beneficiary survey conducted by the ex-post evaluation team.

<sup>11</sup> The operation and maintenance cost, saving of vehicle’s operation cost and time saving cost used for the calculated EIRR are referred from the information in “Project Benefit Monitoring Evaluation Report: JBIC IP-487, 2008” prepared by the executing agency.

## 2.4 Impact

### 2.4.1 Impact on commodity distribution and the movement of people

The main industries in the project area are plantations producing pineapple, sugarcane, tapioca, banana, rubber and pulp and the aqua-culture of prawns. Products are exported to overseas markets or transported to domestic markets in major cities like Jakarta through Bakauheni port. Since the project target road plays an important role in transporting produce, it can be said that the project contributed to the improvement of commodity distribution and the movement of people to a certain degree.

The transport volume of ferry boats between Bakauheni in Sumatra and Merak in Java has also been increasing year by year<sup>12</sup>. For example, the number of cars transported by ferry increased about two times from 3,471 vehicles/day in 2003 to 7,035 vehicles/day in 2007 (see Table 7). With a constant increase in the number of vehicles transported by ferry through Bakauheni port linking with the project target section, the traffic volume in Lampung Province travelling between Sumatra and Java is also increasing. It is expected that after the completion of the entire section of the project in December 2009, more and more cargo trucks and transporters will begin use the target section of the project as a detour route in order to avoid traffic congestion on the existing route of Bakauheni – Bandar Lampung – Gunungsugi – Manggale. Therefore, the role of the project in the promotion of commodity distribution in the region will be more important.

Table 7: No. of Passengers and Vehicles transported by Ferry between Bakauheni and Merak

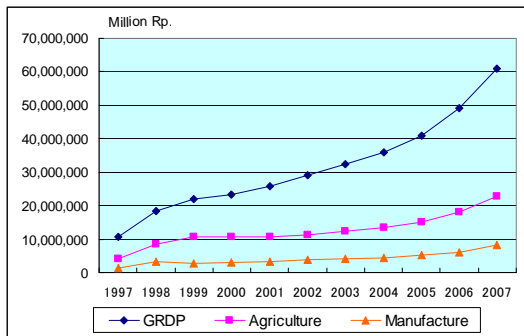
		2003	2004	2005	2006	2007
No. of passengers	Annual	9,042,844	9,376,520	4,630,963	5,697,428	3,582,201
	Daily Average	24,775	25,689	12,688	15,609	9,814
No. of vehicles	Annual	1,267,082	1,428,862	1,658,939	2,338,702	2,567,714
	Daily Average	3,471	3,915	4,545	6,407	7,035

Source: Ferry Company.

### 2.4.2 Impact on the local economy and regional development

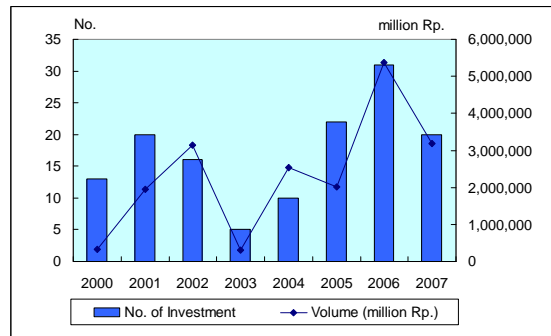
The Gross Regional Domestic Product (GRDP), the agricultural output and the industrial output in Lampung Province have increased stably since 1997. Also the volume and the number of foreign and domestic investments in Lampung Province have shown an upward trend after 2004 (see Figure 3 and 4).

<sup>12</sup> The construction of ferry terminals and related facilities in Bakauheni and Merak ports was financed by three Japanese ODA loan projects: (i) the Lampung - Merak Road and Ferry Terminal Project (ferry terminal component in 1976 (2,300 million yen, completed 1981), (ii) the Bakauheni - Merak Ferry Terminal Extension Project in 1985 (2,200 million yen, completed 1988), and (iii) the Merak - Bakauheni Ferry Terminal Extension Project (2) in 1993 (4,580 million yen, completed in 2002). (Source: ex-post evaluation report on Merak - Bakauheni Ferry Terminal Extension Project (2)).



Source: Lampung Province Statistic Department.

Figure 3: GRDP, Agricultural and Industrial Output in Lampung Province (Constant Price)



Source: Lampung Province Statistic Department.

Figure 4: Foreign and Domestic Investment in Lampung Province

After 2007 the establishment of new factories and the development of economic and commercial activities have been observed along the area of the project target road. For example, two large-scale sugar refinery factories in Menggala and Seputih Banyak, a large-scale tapioca processing factory in Seputih Banyak, and two small factories in Purbalingga located at the middle point between Seputih Banyak and Sukadana have been newly established. Similarly the number of businesses has increased.

Table 8 indicates the number of registered foreign and domestic companies in the four regencies in Lampung Province where the project target road is located. The number of registered companies increased 10 times between 2000 (before the project) and 2008 (after the project). The number of commercial services such as shops, restaurants, petrol stations and car repair workshops expanded along the project target road. The result of the beneficiary survey says that the increase in new business and the expansion of business opportunities have been widely noted by the beneficiaries. Therefore, it can be concluded that the project played a key role in facilitating regional development in the target area.

Table 8: Number of Registered Companies in the Four Regencies in the Project Area

Regency		2000	2001	2002	2003	2004	2005	2006	2007	2008
Tulang Bawang	Foreign	0	0	0	0	0	4	6	6	6
	Domestic	2	3	3	4	4	8	11	11	14
Central Lampung (Lampung Tengah)	Foreign	2	3	4	4	7	9	12	14	15
	Domestic	1	6	6	11	11	13	14	15	15
East Lampung (Lampung Timur)	Foreign	0	0	0	0	0	3	3	3	4
	Domestic	0	0	0	0	0	1	2	3	3
South Lampung (Lampung Selatan)	Foreign	1	2	2	5	6	12	14	14	14
	Domestic	3	10	11	11	17	19	23	24	24
Total		9	24	26	35	45	69	85	90	95

Source: Lampung Province Statistic Department.

#### 2.4.3 Improvement in living standard of the local residents

According to the results of the beneficiary survey, the promotion of business activities and increases in income as well as the improvement of access to various services such as hospitals, schools and health care services were recognized as major positive changes. As explained above, economic and commercial activities were promoted and the convenience for residents improved along the project target road after 2007. Therefore, it can be assumed that the project contributed to the improvement of living standards for local residents.

#### 2.4.4 Traffic accidents

Although statistical data of traffic accidents is only available for the period after 2007, the number of traffic accidents in the four regencies of the target area dramatically increased - about three times - from 187 in 2007 to 584 in 2008, and the number of deaths increased accordingly (see Table 9). Whilst traffic accidents in Lampung Province also increased from 1,363 in 2007 to 1,562 in 2008, 26% of the total traffic accidents and 32% of the total deaths were concentrated in the Tulang Bawang Regency and the Central Lampung (Lampung Tengah) Regency. Since Table 9 shows the total number of traffic accidents in both regency and province, individual traffic accident data for particular target sections cannot be identified. However, considering the fact that the number of traffic accidents in the four regencies increased after 2007 when the project was nearly completed, it can be assumed that quite a few number of traffic accidents occurred along the target project road belong to the number of the traffic accidents in the four regencies. Since the increase in traffic accidents was raised by the beneficiaries as one of the major changes after project implementation in the results of the beneficiary survey, there must be a high possibility that there was an increase in traffic accidents along the target project road after the project implementation in comparison with the situation before project implementation. According to the Lampung Province Police Authority, the major cause of accidents is speeding.

Table 9: Number of Traffic Accidents in the Project Area and Lampung Province

Regency and City	2007		2008		Jan. 2009		Feb. 2009		Mar. 2009	
	No. of Accidents	No. of Deaths	No. of Accidents	No. of Deaths	No. of Accidents	No. of Deaths	No. of Accidents	No. of Deaths	No. of Accidents	No. of Deaths
Tulang Bawang	56	65	207	96	11	2	15	8	12	10
Central Lampung	15	14	206	109	8	6	7	5	9	8
East Lampung	57	60	94	84	7	7	8	12	4	2
South Lampung	59	66	77	91	4	4	6	5	7	9
Sub-total	187	205	584	380	30	19	36	30	32	29

Regency and City	2007		2008		Jan. 2009		Feb. 2009		Mar. 2009	
	No. of Accidents	No. of Deaths	No. of Accidents	No. of Deaths	No. of Accidents	No. of Deaths	No. of Accidents	No. of Deaths	No. of Accidents	No. of Deaths
Bandar Lampung	855	96	691	78	47	12	53	4	47	12
North Lampung	46	45	111	93	7	3	7	5	8	6
West Lampung	36	32	66	16	0	0	7	2	4	4
Tanggamus	38	31	n.a.	n.a.	9	3	8	1	17	11
Way Kanan	27	26	59	61	3	4	5	2	4	3
Metro	174	92	51	14	6	1	5	1	7	1
Total	1,363	527	1,562	642	102	42	121	45	119	66

Source: Lampung Police Authority.

The issue of the recent rise in traffic accidents has been well recognized by the Lampung Provincial Authority, and they have been taking measures for traffic accident prevention such as the installation of traffic lights and traffic signs, the improvement of inter-changes, and the promotion of traffic safety campaigns.<sup>13</sup>

#### 2.4.5 Impact on the natural environment

An Environmental Impact Assessment was not conducted, though a brief survey had already been conducted at the time of appraisal. According to the beneficiary survey of local transporters and businesses (sample size: 141) in the ex-post evaluation survey, 50% of respondents answered that there had been environmental impacts (of which 27% of the respondents replied “very much” and 23% replied “to some extent”). The perceptions of the above respondents to dimensions of the environmental impact were: “increase in air pollution (65%)”, “increase in noise (83%)” and “increase in vibration (69%)” after project implementation. However, as environmental data was not collected in the project area, an analysis of whether actual data surpasses environmental standards is not available. Due to the lack of objective data, the beneficiaries’ opinion cannot be referenced.

According to the executing agency of the project, the installation of environmental monitoring equipment and the conducting of environmental monitoring activities during project implementation became compulsory for all road development projects in Indonesia which had contracts signed after 2009. For this project, the environmental monitoring equipment at a station located in 3km from Sribawono towards Jepara was

<sup>13</sup> Examples of the traffic safety measures are: (i) the installation of one unit of traffic lights between Sribawono and Jepara in 2010, (ii) the installation of 500 units of traffic signs between Bahauheni and Menggala, (iii) the improvement of the inter-change at Menggala, (iv) the implementation of a weekly traffic safety campaign for all regencies and cities in Lampung Province for one year after 2009. The components of the traffic safety campaign are: the organization of a driving skill course and the distribution of booklets on safe driving, the wearing of helmets, safe walking and the safe road crossing of pedestrians. In addition, traffic safety activity has been conducted in collaboration with local governments every three months.



already installed and its operation is scheduled to start from September 2009.<sup>14</sup>

#### 2.4.6 Impact on the social environment associated with the resettlement of residents and land acquisition

At the time of ex-post evaluation the acquisition of 85.7 ha, which is equal to 91.5% of planned area for land acquisition, was complete. According to the executing agency of the project, the remaining 7.93ha of land was scheduled to be acquired by August 2009. The number of households compensated totalled 427 including 400 households in the Ketapang – Jepara section (CA-1) and 27 households in the Jepara – Seputih Banyak section (CA-2). In general, compensation was in money. Most of the land owners sold a part of their compounds; hence there was no relocation of buildings except for 7 or 8 cases (see Table 10).

The main reason for the substantial delay in the project period and even now in the construction work for a part of the target section was the prolonged land acquisition process. The primary reason for the prolonged land acquisition process was the delay in preparing the required land acquisition budget by the central and local governments. In principle the land acquisition cost was to be shared equally by the central and local governments. However, due to the financial difficulties of the provincial and regional governments, for example, the arrangement of the land acquisition budget became difficult. A difficulty in the negotiation with the land owners of compensation prices was also one of the reasons that caused delay. Finally, a measure to prevent further delay was taken by the executing agency through the taking over of the financial obligation of local governments for the land acquisition through a special budgetary arrangement with the central government after 2008.

Table 10: Comparison of Planned and Actual Land Acquisition

Section and Regency	Length (km)	Plan		Completed		On-going	
		Area (ha)	Build -ing	Area (ha)	Build -ing	Area (ha)	Build -ing
(CA-1) Ketapang - Jepara							
South Lampung	14.8	4.97	110	4.97	100	-	10
East Lampung	54.7	17.77	173	14.54	134	3.23	39
(CA-2) Jepara - Seputih Banyak							
East Lamoung	51.8	31.32	181	26.62	102	4.70	79
Central Lampung	8.3	1.50	9	1.50	9	-	-
(CA-3) Seputih Banyak - Manggala							
Central Lampung	39.4	17.65	24	17.65	24	-	-
Tulang Bawang	17.7	20.42	3	20.42	3	-	-
Total	186.1	93.63	500	85.7 (91.5%)	372 (74.4%)	7.93	128

Source: Bina Marga, Ministry of Public Works

<sup>14</sup> The purpose of the installation of the environmental monitoring equipment is to monitor air pollution near the station as there is an asphalt production factory near Sribawono.

It should be noted that there still exists a pending case on land acquisition with the Hindu temple and Hindu community located in the Ketapang – Jeparu section (CA-1)<sup>15</sup>. According to the executing agency, negotiations with the Hindu temple and community have been proceeding only with difficulty, and the resolution of this issue was not expected by August 2009. If there is no progress in the negotiation process in 2009, the executing agency plans to take appropriate legal action. Therefore, it is necessary to continue monitoring progress of the remaining land acquisition.

### Summary Results of Beneficiary Survey Conducted in this Ex-Post Evaluation

In the ex-post evaluation of the “Sumatra East Coast Highways”, a questionnaire survey and group interviews (Focus Group Discussions) with the beneficiaries were carried out. A summary of the results of the beneficiary survey is as follows.

#### <Focus group discussion with local resides living along the project target road>

- (1) Place: Jeparu
- (2) Time: April 2009
- (3) Target group: Local residents near Jeparu
- (4) No. of samples: 35 (21 male and 14 female)

#### (5) Top Five “Changes” that Participants Consider Most Important

Male group: 21 participants		Female group: 14 participants	
	No. of vote		No. of vote
1. Increase in business and income	23	1. Increase in traffic accidents	11
2. Change of driving attitude and discipline (become worse)	20	2. Expansion of economy	7
3. Increase in traffic accidents	10	3. Improvement of driving comfort	7
4. Increase in inter-town connections	8	4. Increase in job opportunities	6
5. Increase in social and cultural changes	2	5. Increase in investment	4

Note 1: At first, all the participants discussed the key question, “How has the project changed your life?” and major common changes were extracted through group discussion. Then each participant, who had three votes, was asked to allocate their votes to the “changes” that they thought most important.

Note 2: Focus Group Discussions were organized separately for male and female groups.

#### (6) Results of Analysis

- Positive changes in economic aspects such as the increases in business, income and job opportunities, and in investment were commonly recognized.
- At the same time, negative impacts such as the increase in traffic accidents and changes in driving attitudes and discipline were perceived.
- It can be assumed that factors such as the increase in traffic volume and velocity, coupled with the lack of traffic safety education and awareness of the drivers, increased the risk of traffic accidents.

<sup>15</sup> The land to be acquired from the Hindu temple is approximately 3,000 square meters of land which makes up part of the compound but does not include buildings. According to the executing agency, the Hindu temple and Hindu community request as a condition of selling their land that not only compensation for the land, but also provision of the entire reconstruction costs of the temple.



FG male group

FG female group

Voting

**<Questionnaire survey to local businesses and transporters >**

- (1) Place: Ketapang-Menggala section
- (2) Time: April 2009
- (3) Target group: Local businesses and transporters
- (4) No. of samples: 141 (73 businesses and 68 transporters)

**(5) Results of Analysis**

- 90% of businesses perceived an increase in the convenience of traffic after project implementation. Major reasons for this answer were: time saving (74%), reduction of vehicle operation costs (17%), reduction of traffic congestion (15%) and so on.
- 70% of businesses recognized the socio-economic impact of the project. These were: increase in new business activities (80%), increase in accessibility to a variety of services (78%), increase in business opportunities (72%), increase in land prices (94%), increase in population (92%) and so on. It can be assumed that the project contributed to the promotion of commercial activities and the activation of the local economy in the project area after the project implementation.
- 60% of transporters recognized an increase in traffic volume after project implementation. In addition, 94% of transporters perceived an increase in the volume of freight vehicles such as trucks.
- 50% of transporters saw an increase in the frequency of transport services, but 44% of them replied that this was unchanged.
- 85% of transporters recognized time saving after project implementation.
- 65% of transporters thought that the number of traffic accidents had increased. They analyzed the causes of traffic accidents as: speeding (20%), drivers' bad manners (15%), increase in traffic volume (7%), lack of traffic signs (4%) and so on.

**<Opinions and recommendation for the project from beneficiaries>**

- A major common opinion expressed by local residents, businesses, and transporters was the necessity for the installation of fly-overs, traffic lights, and street lights for traffic accident prevention along the project target road. Also, the necessity for better periodic maintenance of roads and bridges was suggested.

**2.5 Sustainability (Rating: a)**

No major problem has been observed in the capacity of the executing agency nor its operation and maintenance (O&M) systems; therefore, sustainability of the project is high.

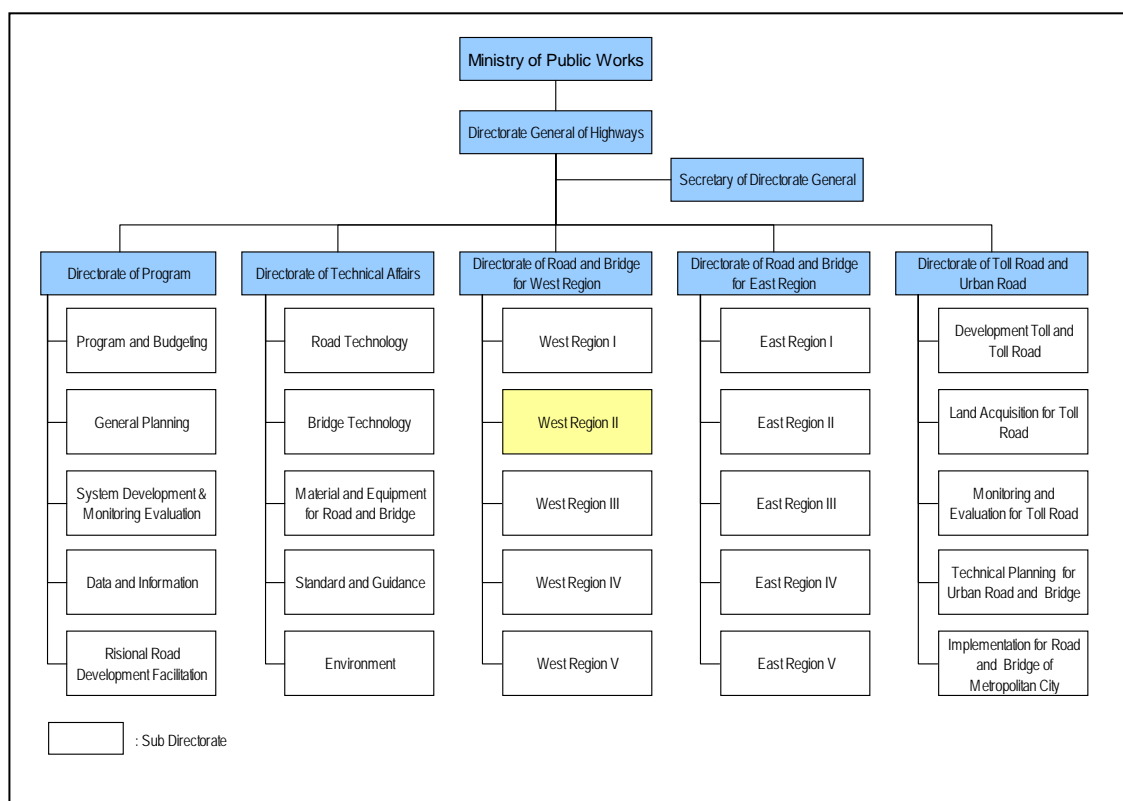
**2.5.1 Executing Agency**

**2.5.1.1 Structural Aspects of Operation and Maintenance (O&M)**

The executing agency for operation and maintenance (O&M) of the project is the

Directorate General of Highways (Bina Marga), Ministry of Public Works. In particular, the Sub-Directorate of the West Region II (Balai Beswar II) under the Directorate of Roads and Bridges for the West Regions is directly in charge of O&M of the project target section (see Figure 5).<sup>16</sup> Balai Beswar II is responsible for the supervision of roads in its territorial area including the project target road. Balai Beswar II makes decisions about O&M work plans while the Bina Marga head office decides which sections require maintenance by using the road management system. Balai Beswar II collects and reports on data for the road management system and, meanwhile, the Bina Marga head office administrates the database. It can be concluded that there is no problem in the O&M system as the managerial responsibilities for O&M are clear.

Figure 5: Organizational Chart of Directorate General of Highways (Bina Marga)



### 2.5.1.2 Technical Aspects of Operation and Maintenance

Balai Basar II has approximately 15 engineers. As these engineers belong to Balai Basar II directly, they can visit the sites frequently and become accustomed with crucial

<sup>16</sup> At the time of appraisal, it was expected that the department of public works in Lampung Province would maintain roads while the regional offices of the Ministry of Public Works would conduct O&M planning or give technical guidance to the province. After the resignation of President Soeharto in 1998, as a result of the review of administrative organization, regional offices (Balai) which are in charge of more than one province under Bina Marga take charge of routine maintenance (inspections, cleaning up, minor civil works, etc.), periodic maintenance and emergency maintenance of roads. Ten Balai are placed across Indonesia.

information such as landform and soil condition. Meanwhile, this system allows Balai Basar II to use the technical knowledge of engineers at regional level. Engineers directly under Balai Basar II are given training for assessment of road condition, survey methods of traffic volume, electronic procurement, project management, quality control, and etc.

### 2.5.1.3 Financial Aspects of Operation and Maintenance

The O&M cost for the project target section is allocated from the central government general budget. After the O&M budget in FY2008, budget allocation was over 120% of that planned by RENSTRA of the Ministry of Public Works (see Table 11). Budget allocation has increased since 2005 and it has become clear that there is more focus on road maintenance.

Table 11: Operation and Maintenance Budget  
(Total of daily maintenance and regular maintenance)

(unit: billion Rp.)

	2005	2006	2007	2008	2009
RENSTRA (planned)	8,400	9,700	11,400	13,100	15,100
Budget allocation	5,900	7,300	9,800	16,000	19,000
% of sufficiency	70.2%	75.3%	86.0%	122.1%	125.8%

Source: Bina Marga, Ministry of Public Works

### 2.5.2 Current Status of Operation and Maintenance

Bina Marga classifies Indonesian road conditions into the following four types using the International Roughness Index (IRI), which is the index for showing the unevenness of roads. IRI is often used as a benchmark in preparing maintenance plans.

- IRI 0-4 m/km : Good - Appropriate for daily maintenance
- IRI 4-8 m/km : Fair - Appropriate for regular maintenance
- IRI 8-12 m/km : Poor - Appropriate for rehabilitation
- IRI >12 m/km : Bad - Appropriate for reconstruction including the sub-base

IRI for the project target sections are shown in Table 12. Except for the Bunt (Ketapang) – Labuha Maringgai section, the road conditions of all sections are classified either “Good” or “Fair”. A possible reason why the IRI at Bunt (Ketapang) –Labuha Maringgai was 8.14 (Poor), was that a part of the section is still incomplete and the old deteriorating road surface remained in some sections. At present, Bina Marga has implemented a project for the installation of weighting stations in Indonesia financed by the World Bank, and they plan to install a weighting station near Ketapang by 2011.

Table 12: IRI for the Project Target Section

Section	Location	IRI (2007)
(CA-1) Ketapang – Jepara	Bunt (Ketapang) – Labuha Maringgai	8.14
(CA-2) Jepara – Seputih Banyak	Sukadana – Purbolinggo	4.13
(CA-2) Jepara – Seputih Banyak (CA-3) Seputih Banyak – Manggala	Purbolinggo – Mandala	3.2
(CA-3) Seputih Banyak – Manggala	Mandara – Bujung Tenuk	3.47

Source: Bina Marga, Ministry of Public Works

### 3. Conclusion, Lessons Learned and Recommendations

#### 3.1 Conclusion

Whilst the relevance of the project is high due to the high consistency between the project objective and Indonesian development policy and development needs, the efficiency of the project was low as project completion was delayed and project costs increased against the plan. After project implementation, expected project effects such as an increase in traffic volume, savings in travelling time, and an increase in velocity were observed. Also, impacts on the promotion of commodity distribution and the movement of people and impacts on the local economy and regional development were recognized. The sustainability of this project is high in terms of the O&M system, technology, and finance by the executing agency as the roads improved by the project are maintained in good condition. In light of the above, this project is evaluated to be satisfactory.

#### 3.2 Lessons learned

In this project, the difficulty of local government in budgeting for land acquisition was one of the major factors which caused delay in project implementation. Despite the fact that the expiry period of the loan agreement was extended, as a result of this delay the project could not be completed by the extended project period. Financial issues are expected finally to be cleared by the arrangement of a special central government budget to be used for the purchase of remaining land after 2008. If such a counter measure had been taken in an early stage, the project would have been completed before the expiry period of the loan agreement.

Insufficient information sharing on the land acquisition process between the executing agency and the local governments revealed the problem of project monitoring. It would be preferable to establish a system to carry out land acquisition smoothly by assigning certain staff to land acquisition monitoring in the executing agency and by

improving the capability for monitoring land acquisition through training, specialist dispatch and the consulting service of the ODA loan projects.

Furthermore, JICA, who is responsible for project monitoring as a financier, should carefully assess the feasibility of land acquisition at the project appraisal and implementation stages.

### 3.3 Recommendations

As the increase in traffic accidents has become a social issue, Lampung Provincial Government and the local police authority should continue to actively promote effective traffic safety measures such as the installation of traffic lights and road signs as well as the implementation of traffic safety education campaigns.

### Comparison of Original and Actual Scope

Item	Original	Actual
(1) Outputs		
a) Road improvement by widening and upgrading of roads		
• (CA-1) Ketapang – Jepara	68 km	69.5 km
• (CA-2) Jepara – Seputih Banyak	50 km	60.1 km
• (CA-3) Seputih Banyak – Manggala	50 km	56.5 km
	Total: 168 km	Total: 186.1 km
		(note) A total 24km of the road, which consist of 22.7km in the Ketapang – Jepara section and 1.3km in the Jepara - Seputih Banyak section was incomplete as of May 2009.
b) Rehabilitation and construction of bridges		
• (CA-1) Ketapang – Jepara	23 bridges (527m)	28 bridges (700m)
• (CA-2) Jepara – Seputih Banyak	11 bridges (172m)	11 bridges (170m)
• (CA-3) Seputih Banyak – Manggala	6 bridges (265m)	6 bridges (265m)
	40 bridges (964m)	45 bridges (1,135m)
c) Consulting services		
• Detailed design	Foreign consultant: 75 M/M Local consultants: 314 M/M	Foreign consultant: 104 M/M Local consultants: 528 M/M
• Assistance for tender		
• Construction supervision		
• Technical advisory service to the executing agency		
(2) Project period		
• Signing of loan agreement	Nov. 1997	Jan. 1998
• Selection of consultant	Oct. 1997-Sep. 1998 (12 months)	Oct. 1998-July 1999 (10 months)
• Selection of contractor	May 1999-Nov. 2000 (19 months)	Nov. 2000-Dec. 2002 (26 months)
• Land acquisition	Aug. 1999-Nov. 2000 (16 months)	Jan. 2000-Aug. 2009 (estimates) (104 months)
• Civil works	Apr. 2001-Mar. 2003 (36 months)	Dec. 2002-Dec.2009 (estimates) (85 months)
• Consulting services	Sept. 1998-Mar. 2003 (55 months)	Sept. 1999-Dec. 2006 (88 months)
(3) Project cost		
Foreign currency	5,300 million Yen	n.a. million Yen
Local currency	3,569 million Yen (68,635 million Rp.)	n.a. million Yen (n.a. million Rp.)
Total	8,869 million Yen	11,627 million Yen
ODA loan portion	6,652 million Yen	4,763 million Yen
Exchange rate	1 Rp.=0.052 Yen (April 1997)	1 Rp. = 0.014 Yen (Weighted average between 1997-2006)