

Romania

Ex-Post Evaluation of Japanese ODA Loan Project
Road Improvement Project

External Evaluator: Yasuhiro Kawabata, Sanshu Engineering Consultant

0. Summary

The objective of the project was to alleviate traffic congestion by constructing bypasses around heavy-trafficked Timisoara and Craiova areas, and widening/improving the existing road between Timisoara and Lugoj along National Road No.6, thereby contributing to activation of the regional economic activities. The project has been highly relevant with the development plans and needs of Romania, as well as Japan's ODA policies. Thus, its relevance is high. Regarding alleviation of traffic congestion, which is the project objective, the current traffic volume of the Timisoara - Lugoj road is about the volume as estimated, and the traffic volume of Craiova Bypass has reached about 70% of the highway capacity for the 2-lane highway in 6 years after open to traffic (2013). The beneficiary survey reveals that 77-85% of beneficiaries recognize the project contributes substantially or fairly to activation of the regional economic activities. This project has largely achieved its objectives. Therefore, its effectiveness and impact is high. Although the actual project scope (output) was partially revised from the originally planned scope, revisions made are considered appropriate. The project cost was higher than planned, and the project period was significantly longer than planned. Therefore, efficiency of the project is considered low. 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



Projection Location



Timisoara Bypass

1.1 Background

The total length of road network in Romania as of 1994 was 73,000km, among which 15,000km was national roads, which cover the whole country. The pavement ratio of national roads was 98%. However, since priority had been given to the railway sector under the socialism regime, improvement¹ and upgrading² of roads had not been undertaken for a long time so that the road standards did not meet the traffic condition at that time. Since the lane width and shoulders were narrow, overtaking was not possible and thus roads were congested. Moreover, strength of pavement and bridges was insufficient so that the maximum weight of cargo trucks was limited to less than 10 tons resulting in less efficiency in transportation.

Due to increase of traffic volume, particularly cargo trucks in the urban area, the government commenced improvement and upgrading of main national roads. As one of improvement programs, the Romanian government requested the Japanese government to finance some sections of National Road No.6, which connects between capital city, Bucharest and the border town, Cenad to the west via Craiova in 1992. Among the sections to be improved, three sections³, which were more trafficked and had high economic potential were selected to be financed by the Japanese ODA Loan.

1.2 Project Outline

The objective of the project was to alleviate traffic congestion by constructing bypasses around Timisoara and Craiova areas, and widening/improving the existing road between Timisoara and Lugoj along National Road No.6, thereby contributing to activation of the regional economic activities. The location of the project site is shown in Figure 1.

¹ "Improvement" means work involving partial modification of road alignments, pavement of road surface, installation of drainage, and slope protection and others.

² "Upgrading" means improvement which involves upgrading the road/highway standard to higher standards such as upgrading from an ordinary road to an expressway or a motorway, or new construction of an expressway.

³ Features of three cities included in the project road sections are as follows: Timisoara (Romanian 4th largest and major industrial city close to the border with Serbia), Lugoj (an old fortress city located about 60km away from Timisoara to the east), Craiova (Romanian 6th largest and major commercial city located to the west of Bucharest)

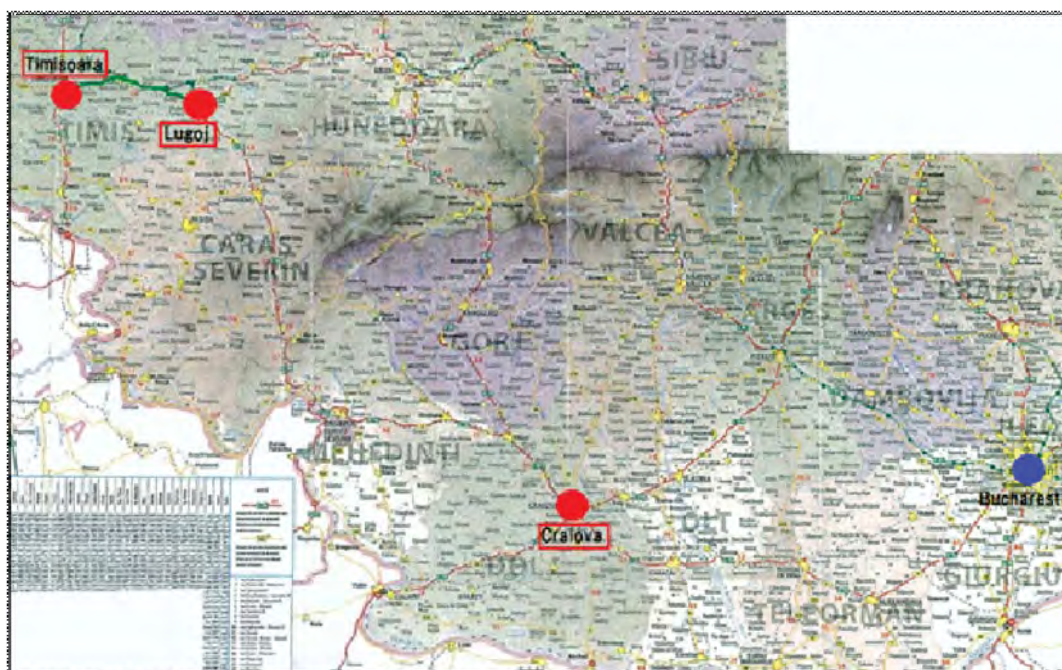


Figure 1 Location of Project Site

Loan Approved Amount/ Disbursed Amount	9,189 million yen/8,983 million yen
Exchange of Notes Date/ Loan Agreement Signing Date	July 1997/February 1998
Terms and Conditions	For civil work and procurement: Interest Rate: 2.70%, Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General untied For consulting services: Interest Rate: 2.30% Repayment Period: 30 years (Grace Period: 10 years) Conditions for Procurement: General untied
Borrower / Executing Agency(ies)	Ministry of Public Finance of Government of Romania /Romanian National Company for Motorways and National Roads (RNCMNR)
Final Disbursement Date	Original date: September 25, 2004 After 1 st revision: June 25, 2007 After 2 nd revision: July 2011
Main Contractor (Over 1 billion yen)	Efklidis (Greek)/Aegek (Greek)/Konoike-gumi JV (January 2003 - November 2006), SC Romstrade SRL/SC Vectra Service SRL (Romania) JV and F.C.C Construction (Spain) (February 2008 - April 2010) for Timisoara Bypass and Timisoara-Lugoj Road, and Italstrade P.A./Astaldi SPA (Italy) JV for Craiova Bypass.
Main Consultant (Over 100 million yen)	Construction Project Consultant (April 2000 - May 2009), Egis Romania (August 2009 - January 2014)
Feasibility Studies, etc.	Pre-feasibility Study by IPTANA S.A. (1995) Feasibility Study by Louis Berger/SPEA (1996) Special Assistance for Project Formation (SAPROF) (1997)
Related Projects (if any)	Second Roads Project by the World Bank (L/A was signed in 1997)

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: September 2013 – August 2014

Duration of the Field Study: November 16 – November 23, 2013, February 11 –February 14, 2014

3. Results of the Evaluation (Overall Rating: B⁴)

3.1 Relevance (Rating: ③⁵)

3.1.1 Relevance to the Development Plan of Romania

After the change of political system in 1989, Romania has aimed at joining European Union (EU) as a national target and pursuing development of the market economy system and stabilization of macro-economy. Thus, in 1990's priority was given to development of economic policies, and no comprehensive national development plan including other sectors such as road and transport sectors was developed. However, at the appraisal time (1997), "the 1997-2000 Governance Program (Management Plan)", which became a basis for the three-year investment plan (including a project list), had been issued in December 1996. Among the infrastructure sector in the Program, significance of transport sector together with energy and telecommunication sectors were recognized, and rehabilitation of national highway and railway network was particularly listed as the most priority agenda.

In National Development Plan 2007-2013, which was effective at the post evaluation stage, six priorities were defined as priority agendas for development including the followings: 1) increasing economic competitiveness and developing the knowledge-based economy referring to the European experience; 2) development and modernization of transport infrastructure; 3) environment protection and improvement; 4) development of human resources, promotion of employment and social inclusion, and strengthening of the administrative capacity; 5) development of the rural economy and increase of agricultural productivity and 6) reducing regional development disparity. Regarding development and modernization of transport infrastructure, since Romania joined European Union (EU) in January 2007, rehabilitation and development of infrastructure based on the EU standards was particularly the agenda to be urgently tackled.

At the appraisal time, significance of the transport sector was recognized in Romania, and particularly rehabilitation of highway and railway networks was listed as the first priority agenda. At the ex-post evaluation, rehabilitation and development of infrastructure based on the

⁴ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

⁵ ③: High, ② Fair, ① Low

EU standards is the agenda to be urgently tackled. Thus, the project conforms with the Romanian development policies.

3.1.2 Relevance to the Development Needs of Romania

In Romania, according to the railway-first policy under the socialist regime, improvement and upgrading of highways had not been implemented for a long time, and only minor maintenance had been undertaken to the existing national highway network, which was constructed during the socialist regime period. Entering into 90's, demand to road transport and transportation had increased due to motorization and development of the market economy system in Romania. (The average growth rate of daily traffic in the national highways during 1990 - 1995 was 5%.) Thus, the existing national road network could not cope with the increased traffic volume and vehicles growing to a large size. Particularly, in larger cities, where widening of existing roads/highways was not feasible, traffic noise and congestion caused by passage of large vehicles had created problems, and necessity of construction of bypasses was noted.

After joining EU in 2007, road/highway development has been promoted in Romania. Particularly, rehabilitation of arterial roads/highways, focusing on national roads, which are overlapping sections of the European Motorway Network⁶, has been implemented, and pavement condition has been improved. Rehabilitation work of Lugoj - Craiova section along National Road No. 6 (European highway No. 70), which includes the project roads under the project has been completed. However, a plan to rehabilitate and/or upgrade to a motorway after 2020 is now being considered. Even at the ex-post evaluation, development of road infrastructure is one of the top priority agendas for the Government. In the event of heavy snow in January/February 2012, snow removal could not catch up with snow fall, and economic activities and citizen's life were severely affected. The Government intends to tackle further enhancement of logistical environment in both soft and hard components and aspects.

At the appraisal time, in larger cities, where widening of existing roads/highways is not feasible due to increased traffic volume and vehicles growing to a large size, necessity of construction of bypasses was noted. Development of road infrastructure to enhance logistical environment in both software and hardware aspects is still one of the top priority agendas for the Government. Thus, the project conforms with Romanian development needs.

3.1.3 Relevance to Japan's ODA Policy

In the Strategy for Overseas Economic Cooperation Operations (issued in December 1999), it is stated that the European region (central and eastern European countries and former Soviet

⁶ International highway network in Europe, which expands crossing over borders. Routing is defined by European Economic Commission.

Union countries) are in the transition period to the democratic and market economy states, and thus, lack of maintenance of socio-economic infrastructure and environmental problems were recognized and became apparent in the transition stream from the old regime. Responding to the diversified development needs of each country, priority was given to the assistance for rehabilitation and development of socioeconomic infrastructure and environmental protection measures and others. Thus, project conforms with the Japanese assistance policies.

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

3.2 Effectiveness⁷ (Rating: ③)

3.2.1 Quantitative Effects (Operation and Effect Indicators)

Since no operation and effect indicators but only Economic Internal Rate of Return (EIRR) was listed at the appraisal stage, the difference between the projected traffic volume and the actual volume, and change of travel time before and after the project were selected as operation and effect indicators under this evaluation.

(1) Daily Traffic Volume

The average daily traffic volume of the project roads is shown in Table 1.

Table 1 Average Daily Traffic Volume

Unit: passenger car unit (vehicles/day)

	Base line	Actual/Projected volume	
	1995	2010	2013
Timisoara - Ghiroda 4-lane section (2.6km section)	11,200	23,300 (22,600)	24,900 (25,400)
Recas - Lugoj 2-lane section (32.2km section)	6,500	13,000 (13,000)	14,000 (14,600)
Craiova Bypass	-	11,000 (n.a)	12,740 (n.a)
Timisoara Bypass	-	5,030 (5,430)	5,700 (5,900)

Source: Project appraisal documents, SAPROF report, Responses to the Questionnaire

Note 1: Traffic volume between Ghiroda and Recas is not available.

Note 2: Numbers in () are projected volume by SAPROF.

Note 3: Nation-wide traffic counts for arterial roads are undertaken every five years.

Automatic traffic counting device is installed at some points along the Timisoara-Lugoj section.

Note 4: Passenger car unit (vehicles/day) is the unit derived by converting actual number of all the kinds of vehicles to number of passenger cars.

Note 5: Regarding the actual traffic volume of both Craiova and Timisoara Bypasses as of 2013, the peak-hour traffic was counted in end-November 2013 for the study and converted to the daily traffic volume.

Note 6: The completion date of Timisoara-Lugoj Road and Timisoara Bypass is 2010 and that of Craiova Bypass is 2007.

⁷ Sub-rating for Effectiveness is to be put with consideration of Impact.

The traffic volume of 4-lane and 2-lane sections of Timisoara - Lugoj road is about the volume as projected as of 2010 and 2013 (three years after completion). The traffic volume of Craiova Bypass has increased by about 5.1% per year for the past three years, and it has reached about 70% of the highway capacity of 2-lane highway (generally considered to be about 18,000 vehicles /day) as of 2013 (six years after open to traffic). Thus, it reveals that the Bypass has been used as an alternative route of the existing road. The traffic volume of Timisoara Bypass has increased by about 4.4% per year for the past three years, and the current traffic volume is about equivalent to projected volume. The reason for not large increase (about 30% of the highway capacity) of traffic, comparing with traffic volume of Craiova Bypass is that the ring road including the bypass has not been completed and the highway network has not been established yet.

(2) Travel Time

Changes of travel time are shown in Table 2.

Table 2 Change of Travel Time

Unit: minutes

Road	Base line	Actual/Projected volume	
	1995	2010	2013
Timisoara - Lugoj	63	47	60
Craiova Bypass (new construction)	-	18	23
Timisoara Bypass (new construction)	-	22	30

Source: Responses to the Questionnaire

The average travel time between Timisoara and Lugoj before the project was 63 minutes and was shortened to 47 minutes in 2010, right after the project completion. However, as traffic volume increases with the economic development, traffic congestion was worsened and thus, the average travel time was elongated to 60 minutes as of 2013. Beneficiaries recognize that it became more maneuverable and the highway safety was enhanced because of widened carriageway of the road. The average travel time of Craiova and Timisoara Bypasses has been elongated as traffic volume has increased with the economic development like Timisoara - Lugoj road.

3.2.2 Qualitative Effects

In order to examine the qualitative effects (streamlining/activation of regional economic activities and improvement of environment such as noise and air pollution) by the project, the beneficiary survey⁸ was conducted in the following manner.

⁸ Number of samples: total 120 (40 samples each for three project roads, drivers (31%), transport company employees (26%), businessman (10%), others (33%)); male (68%), female (32%); method: interview with a Questionnaire

Results of Beneficiary Survey:

(1) Streamlining/activation of Regional Economic Activities

The assessment result by residents on improvement of access is shown in Figure 2 and that on shortening of travel/commuting time in Figure 3.

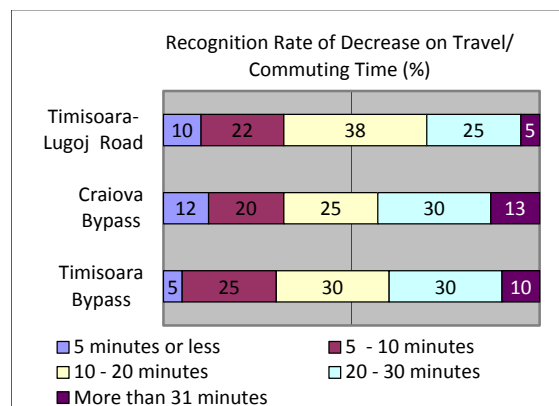
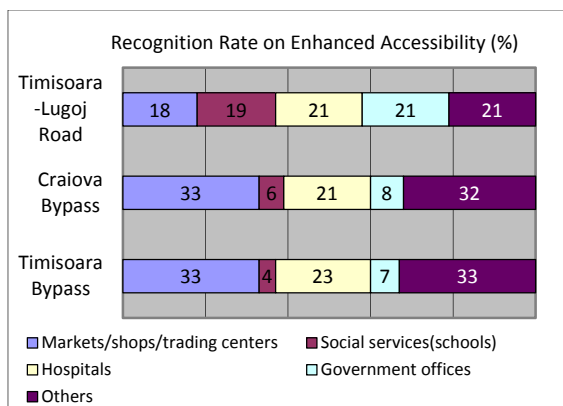


Figure 2 Improvement of Access⁹

Figure 3 Shortening of Travel/Commuting Time

Regarding the improvement of access, road users of the intercity Timisoara - Lugoj road and residents along the corridor evaluate that access to all the facilities and services was improved. Road users of Craiova and Timisoara Bypasses and residents along the road recognize that particularly, access to markets/shops/trading centers and hospitals was improved.

Regarding shortening of travel/commuting time, road users of the intercity Timisoara - Lugoj road and residents along the corridor admit that travel time was shortened by 15 minutes in average. Road users of Craiova and Timisoara Bypasses and residents along the corridors recognize that it was shortened by 17 - 18 minutes in average. Thus, the project seems to contribute to streamlining/activation of regional economic activities

(2) Improvement of Environment

The assessment results by residents on alleviation of traffic congestion, improvement of air pollution and reduction of traffic noise improvement of access are shown in Figures 4, 5 and 6, respectively.

⁹ The question asks whether or not improvement was made regarding the accessibility to every facilities. Multiple answers are allowed.

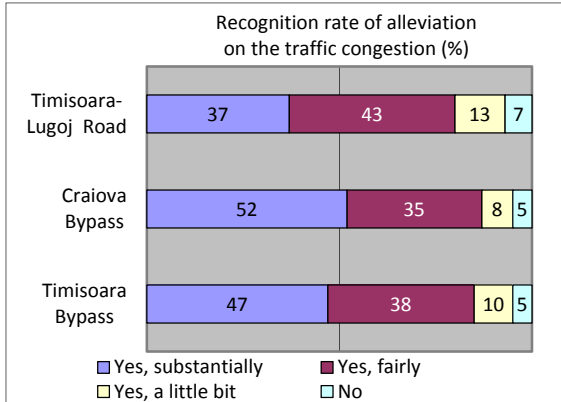


Figure 4 Alleviation of Traffic Congestion

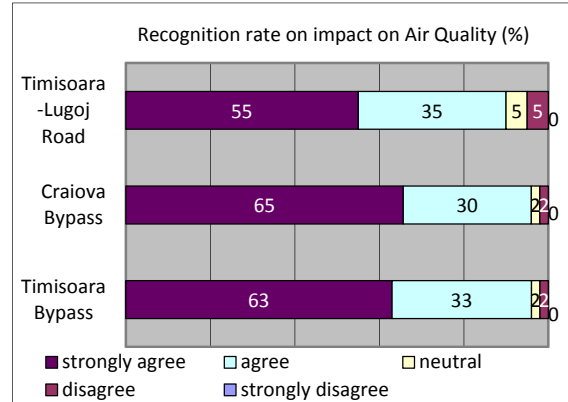


Figure 5 Improvement of Air Pollution

Regarding contribution of three project roads to alleviate traffic congestion, about 80-87% of respondents admit that its contribution is “substantial” or “fair”.

Regarding the question on contribution of the project to improvement of air pollution, about 90-96% of respondents admit or strongly admit its contribution. It should be noted that particularly, while the project scope was to widen and improve the existing road, improvement of air pollution along Timisoara - Lugoj road is recognized because of alleviation of traffic congestion.

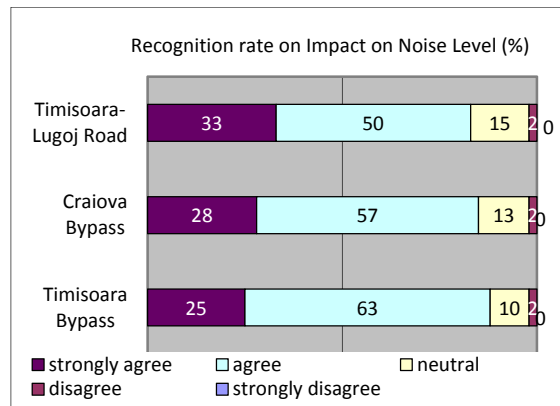


Figure 6 Reduction of Traffic Noise

Regarding contribution of three project roads to reduce traffic noise, about 83-88% of respondents admit or strongly admit its contribution because of alleviation of traffic congestion.

3.3 Impact

3.3.1 Intended Impacts

In order to examine contribution of the project to the regional economic development, the number of approval for new installation of advertising panels along the corridor for Timisoara - Lugoj road, and the number of approval for agricultural exploitation along the corridor of Craiova Bypass were observed during the field study. Findings are summarized in Table 3 and Table 4.

Table 3 Number of Approval for Installation of Advertising Panels along the Corridor

Number of Approval for Installation of Advertising Panels	2009	2010	2011	2012	2013
	4	2	10	2	8

Source: Responses to the Questionnaire

Along Timisoara - Lugoj road, there were 10 application/ approval for installation of advertising panels in 2011, right after the project completion and 8 application/ approval in 2013. These numbers suggest that private enterprises recognize the potential for the economic development in the region.

Table 4 Number of Approval for Agricultural Exploitation

Number of Approval for Agricultural Exploitation	2008	2009	2010	2011	2012
	3	5	4	-	3

Source: Responses to the Questionnaire

Along Craiova Bypass, there were a few application for agricultural exploitation every year after the project completion, except 2011. It seemed that the potential for the economic development along the corridor has been recognized since access was improved and thus it became more convenient to transport agricultural products to urban cities.

The survey on the enterprises which moved into the bypass corridors after completion of the project was undertaken. Along Timisoara Bypass, a manufacturer producing automobile headlamps, showrooms for Ford and Land Rover cars, a logistic and transportation firm, and two gas stations have moved into the area. Along Craiova Bypass, a motel, a hotel (with a swimming pool), a window/door fabrication/sales firm, a warehouse for agricultural product and processing, and a logistic/warehouse/distribution firm have been established.

From the beneficiary survey, the following results on recognition of contribution of the project to the regional economic development were found.

(1) Activation of Economic Activities

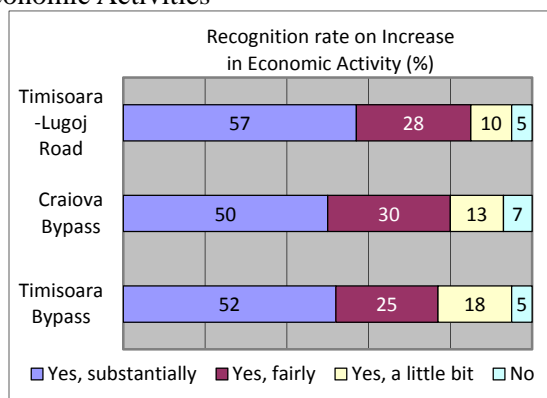


Figure 7 Activation of Economic Activities

Regarding contribution of three project roads to activation of economic activities, about 77-85% of respondents admit that its contribution is “substantial” or “fair”.

(2) Increase of Business Chances

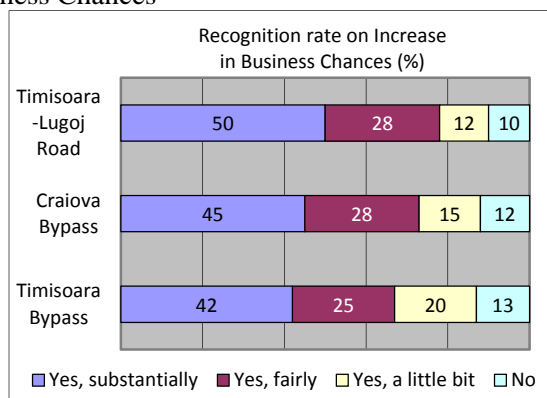


Figure 8 Increase of Business Chances

Regarding contribution of three project roads to increase of business chances, about 67-78% of respondents admit that its contribution is “substantial” or “fair”.

(3) Activation of Land Use

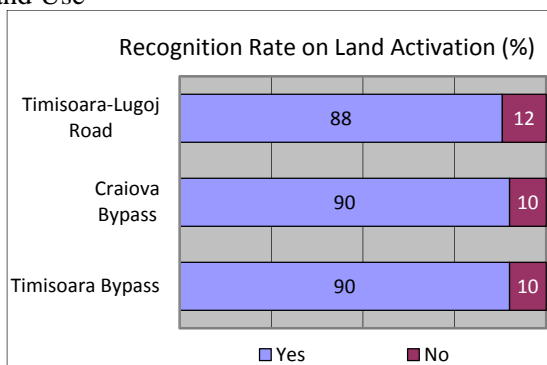


Figure 9 Activation of Land Use

Regarding contribution of three project roads to activation of land use, about 90% of respondents admit its contribution.

3.3.2 Other Impacts

(1) Impacts on the natural environment

The Environmental Agreements (EA) to three project roads were issued by Ministry of Waters, Forests and Environmental Protection as follows:

- Improvement of an existing road between Timisoara and Lugoj: September 2001
- Construction of Craiova Bypass : August 1998
- Construction of Timisoara Bypass: revised version in April 2001 (original version in January 1999)

During the project implementation, environmental monitoring was undertaken. When problems including drainage of rain water and the access¹⁰ to private properties occurred, contractors resolved the issues properly by additionally constructing drainage and access approaches, following the instructions by the implementing agency. Regarding disposal of soils and protection of slope erosion, countermeasures including transporting wasted soils to the designated sites and undertaking planting works were also properly implemented. After the project was completed, a brief environmental impact assessment was made, and traffic signs (e.g. lowered speed limit) were installed to sections where traffic noise and vibration were issues.

(2) Land Acquisition and Resettlement

Planned and actual numbers of resettled households and land area acquired are as follows:

Table 5 Number of Resettled Households and Land Area Acquired

	Plan	Actual
Land Area acquired	Timisoara – Lugoj 9.9 ha	0
	Craiova Bypass 30.4 ha	43.2 ha
	Timisoara Bypass 33 ha	41.0 ha
	Total 73.3 ha	84.2 ha
Number of Resettled Households	4 - 5 households	0
Compensation paid	US\$ 3.49 million	3.98 million lei for Craiova Bypass (\$1.22 million at the current exchange rate)

Note: Current exchange rate as of December 2013: 1 lei = US\$0.30266

¹⁰ Condition that no road approaching to the lot is provided.

Increase of land area acquired was made mainly by securing the area needed to relocate some facilities and the sufficient area to construct intersections.

Regarding land acquisition for construction of Craiova Bypass, since residents who claim that he/she is a land owner did not possess the documents such as the title to an estate, which proves his/her ownership, it took a long time to process the compensation procedures. With respect to certification of the ownership, compensation was eventually paid to the people who possess any official documents possibly certifying the ownership instead of the title, following the national laws and regulations. In addition, since service roads were not constructed parallel to the partially access controlled bypass, some properties were divided into two lots by a bypass, hence no access to some lots was provided and Craiova Regional Roads and Bridges Directorate was sued by residents. As a result of the trial, the court ordered the Regional Road and Bridges Directorate to pay compensation to the residents. Payment was made and provision of access was also made as a countermeasure to tackle the issue on the division of properties. The lengthy battle/procedures at the court resulted in extension of the project period.

(3) Other Positive and Negative Impacts

None.

The traffic volume of Timisoara - Lugoj road and Timisoara Bypass is about the volume as projected. The traffic volume of Craiova Bypass has reached about 70% of the highway capacity of 2-lane highway, and it has been used as an alternative route of the existing road. Regarding change of travel time, the time between Timisoara and Lugoj before the project was 63 minutes and was shortened to 47 minutes in 2010, right after the project completion. However, as traffic volume increases with the economic development, traffic congestion was worsened and thus, the travel time was elongated to 60 minutes as of 2013. The travel time of Craiova and Timisoara Bypasses has been elongated as traffic volume has increased. Regarding the question on contribution of the project to improvement of air pollution, about 90-96% of respondents admit or strongly admit its contribution. Regarding contribution to reduce traffic noise, about 83-88% of respondents admit or strongly admit its contribution.

Regarding contribution (impacts) to the regional economic development, about 77-85% of respondents admit that its contribution of three project roads to activation of economic activities is “substantial” or “fairly” and about 67-78% of respondents admit that its contribution to increase of business chances is “substantial” or “fairly”.

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

3.4 Efficiency (Rating: ①)

3.4.1 Project Outputs

The original and actual output of the project is shown in Table 6.

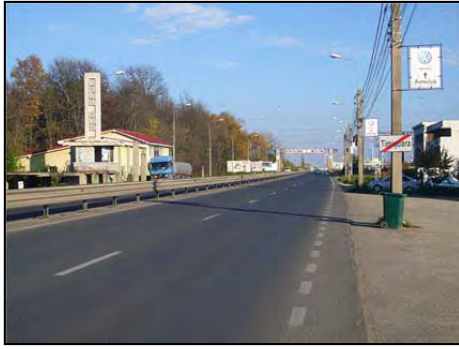
The original project scope at appraisal was planned based on the project scope and bill of quantities defined in the feasibility study, which was completed in 1999. However, detail designs were undertaken under the project, and the project scope was partly revised.

Table 6 Comparison of Output (original and actual)

Item	Project Scope at Appraisal	Project Scope at Project Completion
Civil Work	<ul style="list-style-type: none"> Improvement of the existing road between Timisoara and Lugoj (52.2km), among which the 49.6km section is improvement of 2-lane section and 2.6km section is improvement of 4-lane section including rehabilitation of 10 bridges. Construction of Craiova Bypass (13.8km), including construction of a bridge and three intersections. Construction of Timisoara Bypass (15km), including construction of three bridges and three intersections. 	<p>Road length is as planned. Regarding bridges, three existing bridges were demolished and reconstructed.</p> <p>Road length is almost as planned. (14.1km) A short bridge, which overpasses the ash transporting pipes was constructed as an additional work. If intersections both at beginning and ending points are included, the total number of intersections is 5.</p> <p>Road length was shortened to 12.6km due to change of alignment partly. The number of bridges constructed is 5. The number of intersections was increased by one. If intersections both at beginning and ending points are included, the total number of intersections is 6.</p>
Consulting services	<ul style="list-style-type: none"> Detail designs Assistance for tendering (preparation and evaluation) Construction supervision <p>Foreign expert: 95 M/M Local expert: 119M/M</p>	The scope of work is as planned.

Source: Project appraisal documents, Project completion report, Responses for the Questionnaire

At the implementation stage of detail designs, which were undertaken taking into account the field condition and actual situation, the project scope was partly revised. Revisions made are considered appropriate. Regarding consulting services, since the project period was substantially extended, the input by the consultants (man/months) was also substantially increased.



Beginning point of Timisoara - Lugoj Road
(4-lane section)



Timisoara - Lugoj Road
(2-lane section)



Ending point of Timisoara - Lugoj Road
(2-lane section)

3.4.2 Project Inputs

3.4.2.1 Project Cost

The estimated project cost at appraisal was 14,608 million yen, among which the total Japanese ODA loan was 9,189 million yen. The actual project cost was 18,549 million yen, among which the total Japanese ODA loan was 8,983 million yen and higher than planned (equivalent to 127% of the planned cost).

Table 7 Comparison of Project Cost (Planned and Actual)

Unit: million yen

Item	Planned			Actual		
	ODA loan	Own fund	Total	ODA loan	Own fund	Total
• Civil Work	8,734	0	8,734	7,938	6,342	14,280
1. Timisoara - Lugoj road	3,355	-	3,353	3,640	2,227	5,867
2. Craiova Bypass	1,858	-	1,858	2,135	1,969	4,104
3. Timisoara Bypass	1,812	-	1,812	2,163	2,146	4,309
4. Price Escalation	1,295	0	1,295	-	-	-
5. Contingency	416	0	416	-	-	-
• Consulting Services	455	0	455	1,045	28	1,073
• Land Acquisition	0	550	550	0	224	224
• Tax	0	4,869	4,869	0	2,972	2,972
Total	9,189	5,419	14,608	8,983	9,566	18,549

Source: Project appraisal documents, Project completion report, Responses to the Questionnaire

Exchange rates: at appraisal: 1 US\$ = 118 yen, 1 US\$ = 3,492 old lei, 100 yen = 2,959 old lei, in January 2002, 100 yen = 2,469 RON, in December 2013, 100 yen = 3,1868 RON

Cost estimation made: 1997

Note 1: The contract price with contractors was fixed with the exchange rate as of October 28, 2002.

Main reasons for increase of project cost increase are as follows:

- 1) The project period was substantially extended. The originally planned project period of 56 months was extended to 151 months.
- 2) During the project implementation, a contractor for 2 contract sections out of 3 contract sections was replaced. Regarding the consultant, which was responsible for construction supervision, the foreign consultant withdrew at the last implementing stage, and another foreign consultant through the Romanian Branch took over the consulting services.
- 3) Part of the project scope has changed, and the actual bill of quantities increased.

3.4.2.2 Project Period

The originally planned project period was from February 1998 (signing of the Loan Agreement) to September 2002 (completion of civil work) with a total period of 56 months. The actual project period was from February 1998 (signing of the Loan Agreement) to August 2010 (completion of civil work) with a total period of 151 months (equivalent to 270% of the plan).

Table 8 Comparison of Project Period (Planned and Actual)

	Planned (at L/A signing)	Actual
Selection of a consultant	1997.09 – 1998.05	
Detail design	1998.06 – 1998.11	2001-2002.11
Land acquisition	1999.01 – 1999.12	
Bidding for civil work	1998.10 – 2000.03	2007.6 – 2008.2 (rebidding for J1 and J2 contract sections)
Civil work • Timisoara - Lugoj road • Craiova Bypass • Timisoara Bypass	2000.04 – 2002.09	Original: 2003.01-2006.11; Rebidding: 2008.2-2010.4 2003.08-2007.06 Original: 2003.01-2006.11; Rebidding: 2008.02-2010.8
Consulting services	1998.06 – 2002.10	Original contract: 2000.04 - 2009.05 After rebidding: 2009.08 - 2014.01

Source: Project appraisal documents, Project completion report, Responses to the Questionnaire

Note 1: During the period from June to July 2009, when a supervision consultant was not engaged, Timisoara Regional Roads and Bridges Directorate was in charge of supervision.

Main reasons for delay of the project implementation are as follows:

- 1) Even though implementation details of activities (selection of a consultant, detail designs, land acquisition, and tendering for civil work) before the civil work commenced (in January 2003) are uncertain, implementation was already behind the planned schedule by about three years at the commencement of civil work. Main reasons are as follows:
 - change of disbursement method

- unexpected time consumption for negotiations with the consultants
 - time required for clarification of underground objectives (such as gas pipes) during the detail design stage
 - clarification of conformation of clauses stated in the bidding documents with the Romanian rules/regulations
 - adjustment of payment procedures to contractors
- 2) In the sections to be improved along the existing Timisoara - Lugoj road, particularly where the existing pavement was seriously damaged or deteriorated, the length of the project road, where the originally planned minimum repaving (overlay) on the existing road was needed to be changed to the new construction of pavement structures by scarifying the existing pavement surface. This was extended from 4,610m to 26,340 m, resulting in 12 months extension of project period.
 - 3) Even though no major problems were anticipated regarding land acquisition, it took about two years to negotiate with land owners under the Craiova Bypass project.
 - 4) Due to unsatisfactory performance of a joint venture entity consisting of two Greek companies and a Japanese company, who won contracts for improvement and widening of the existing Timisoara - Lugoj road and construction of Timisoara Bypass, the contract with the joint venture was cancelled in November 2006 and rebidding for new contractors was undertaken. The reason for unsatisfactory performance by the joint venture was financial collapse of two Greek companies. Work for two contract sections was recommended by new contractors in February 2008, and completed in April 2010 and August 2010, respectively.
 - 5) Due to unsatisfactory performance of a contractor, who won the contract for construction of Timisoara Bypass after rebidding, particularly during the early stage of recommenced work, the project period was extended.
 - 6) Due to bankruptcy of a Japanese consulting firm who won the contract for consulting services including detail designs and construction supervision in September 2008, the contract with the firm was officially cancelled in May 2009. After that, reselection of a consultant was made. During absence of a consulting firm, Timisoara Regional Roads and Bridges Directorate was in charge of supervision.

3.4.3 Results of Calculations of Internal Rates of Return (IRR)

Economic Internal Rate of Return (EIRR) for the whole three components calculated at appraisal was 28.3%. Regarding EIRR at the post evaluation stage, since the data on costs (economic cost of yearly construction and maintenance costs) and benefits (e.g. vehicle operating cost by type of vehicle, time saving unit cost, average damage cost of fatal/injured/damage accidents) needed for calculation of EIRR were not available, recalculation

was not made.

Although the actual project scope (output) was partially revised from the originally planned scope, changes made are considered appropriate. The project cost was higher than planned, and the project period was significantly longer than planned. Therefore, efficiency of the project is considered low.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

In February 2004, National Road Administration (NRA) was reformed to Romanian National Company of Motorways and National Roads (RNCMNR), and construction of motorways and operation/maintenance was added to the business operations by NRA. The total length of roads under management at the post evaluation stage is about 17,000 km including 548 km of motorways. There are 7 Regional Roads and Bridges Directorates (RRBD) under RNCMNR Headquarter. Timisoara RRBD is responsible for operation and maintenance of Timisoara - Lugoj road and Timisoara Bypass under the project, and Craiova RRBD for Craiova Bypass. Timisoara RRBD consists of 5 departments including the department in charge of operation and maintenance. The total number of staffs is about 210 and the number of staffs assigned to the operation and maintenance department is about 65. Under the RRBD, there are 5 branch offices within the assigned region with a total staff number of 540. Craiova RRBD has similar organizational setup and consists of 5 departments including the department in charge of operation and maintenance. The total number of staffs is about 210 and the number of staffs assigned to the operation and maintenance department is about 50. Under the RRBD, there are 5 branch offices within the assigned region with a total staff number of 530. Both Timisoara and Craiova RRBDs entrust the routine and periodic maintenance work to private contractors, who are specialized in maintenance work, and were selected through the competitive bidding with a few years contract period.



Ending Point of Craiova Bypass



Craiova Bypass

3.5.2 Technical Aspects of Operation and Maintenance

Numbers of staffs in charge of operation and maintenance of road sections constructed/improved under the project are 22 and 19 in Timisoara and Craiova RRBDs respectively and both RRBD management considers that these are considered appropriate. Majority of these staffs are administrative officials and engaged in administrative services and contract management. Since most of them are administrative staffs, they do not take any specific external training. However, guidelines/manuals on maintenance work are developed/ prepared under the EU-financed road improvement projects. Main documents prepared are: standards for rehabilitation of public roads, methodology for conducting acceptance of maintenance work and rehabilitation of roads and bridges, and technical instructions for maintaining bridge condition. As mentioned above, both Timisoara and Craiova RRBDs entrust routine and periodic maintenance work to private contractors. In the bidding for selection of a contractor, selection is made by examining company's technical capacity (company's experience of similar work, employees' educational and professional qualification and experience, and equipment owned), and financial capacity (annual turnover, assets and liabilities, profit and loss) together with checking the bid price. Contractors have undertaken maintenance work according to the terms of reference and RNCMNR 's guidelines and manuals.

3.5.3 Financial Aspects of Operation and Maintenance

The amount spent for maintenance by Timisoara and Craiova RRBDs for the past 3 years is shown in Table 9.

Table 9 Amount spent for maintenance by RRBDs for the past 3 years

Unit: million RON

RRBD	2010	2011	2012
Timisoara	61.1	132.0	473.5
Craiova	68.7	74.2	100.7

The amount spent for maintenance by both RRBDs for the past 3 years has been increasing year by year. Expenditures by Timisoara RRBD increased by about 3.6- fold from 2011 to 2012. The reason for increase is that Motorway Route No.1 heading the west via Arad from Timisoara was open to traffic in 2012 and the monitoring equipment was installed.

The amount spent for maintenance of three road sections under the project for the past 3 years is shown in Table 10.

Table 10 Amount spent for maintenance of Project Roads for the past 3 years

Unit: RON

Road	2010	2011	2012
Timisoara - Lugoj	146,168	175,781	209,082
Craiova Bypass	211,970	394,198	359,250
Timisoara Bypass	671,079	674,905	771,192

The amount spent for maintenance of three road sections under the project for the past 3 years tends to generally increase except no increase in some years.

3.5.4 Current Status of Operation and Maintenance

The maintenance work has been undertaken by private contractors under the supervision of both Timisoara and Craiova RRBDs. As daily maintenance work, the surveillance and inspection work on the following items has been conducted.

- damage and flatness of pavement surface
- assurance of good condition of drainage and gutters
- oscillation of level and cleanness at shoulders
- damage on guardrails and poles
- assurance of good condition of traffic signs and markings and
- others

Simple repairs are undertaken weekly including following items in case abnormalities were found,

- assurance of water drain and cleaning of discharge holes
- replacement of guardrails damaged by traffic accidents
- repair of traffic signs and cleaning of damaged markings

Moreover, repainting of markings and repair of traffic signals and guardrails are included in the periodic maintenance, which is undertaken almost every 2 months. During the winter time, snow removal is conducted every day as needed.

Neither major damage nor defect on road sections constructed/improved under the project was observed by ocular inspections during the field visit.

The current operation and maintenance system is well organized and the number of staff assigned is considered appropriate. There are no particular issues on manuals prepared and thus, there are no technical issues in order to sustain the effectiveness of the project. The maintenance budget has been properly allocated and thus, there is no issue in financial aspects. Neither major damage nor defect on road sections constructed/improved under the project was observed by ocular inspections during the field visit.

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.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of the project was to alleviate traffic congestion by constructing bypasses around heavy-trafficked Timisoara and Craiova areas, and widening/improving the existing road

between Timisoara and Lugoj along National Road No.6, thereby contributing to activation of the regional economic activities. The project has been highly relevant with the development plans and needs of Romania, as well as Japan's ODA policies. Thus, its relevance is high. Regarding alleviation of traffic congestion, which is the project objective, the current traffic volume of the Timisoara - Lugoj road is about the volume as estimated, and the traffic volume of Craiova Bypass has reached about 70% of the highway capacity for the 2-lane highway in 6 years after open to traffic (2013). The beneficiary survey reveals that 77-85% of beneficiary recognize the project contributes substantially or fairly to activation of the regional economic activities. This project has largely achieved its objectives. Therefore, its effectiveness and impact is high. Although the actual project scope (output) was partially revised from the originally planned scope, revisions made are considered appropriate. The project cost was higher than planned, and the project period was significantly longer than planned. Therefore, efficiency of the project is considered low. 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

None.

4.2.2 Recommendations to JICA

None.

4.3 Lessons Learned

- (1) Plans to ensure the access to residents in case of land acquisition, which causes the division of communities.

Regarding land acquisition for construction of Craiova Bypass, it took a long time to process the compensation procedures. Particularly, because some properties owned by residents were divided into two lots by a bypass resulting in no provision of access to some lots, the implementing agency was sued by residents. Thus, it needed a longer time to settle the compensation issues. This fact hints that the examination and studies on issues regarding land acquisition including division of properties was insufficient at the detail design stage. JICA needs to request the implementing agency to submit a Resettlement Action Plan, which discusses in detail and incorporates the current condition accurately from the appraisal stage.

