

Philippines

Impact Study on Transport Projects in Metro Manila

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1 Overall Evaluation of the Projects

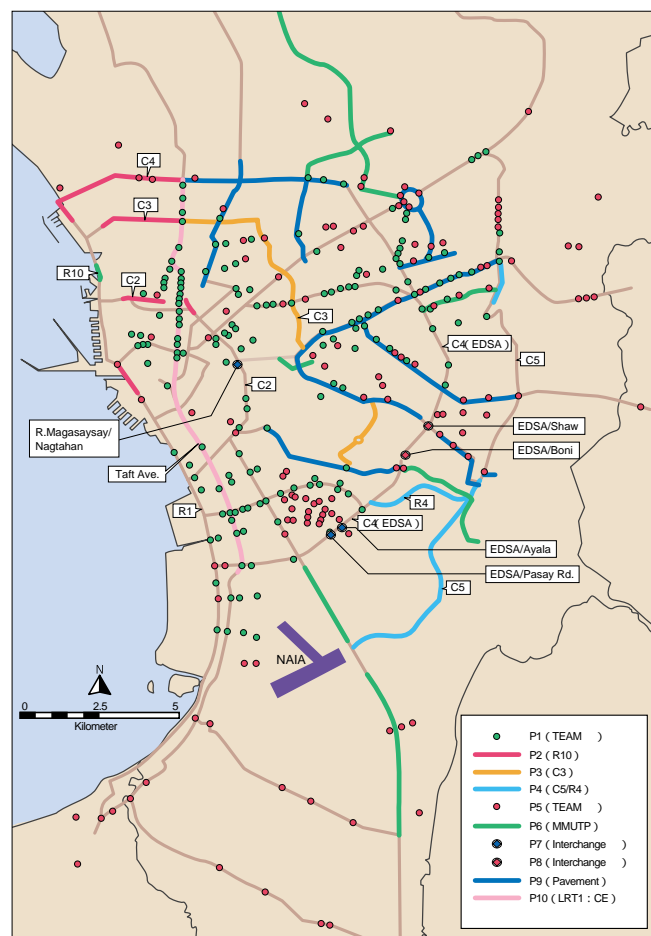
1) Overall Impact of the Projects

The transport projects covered by this evaluation (see Table 1 Evaluated ODA Loan Projects) all yielded extraordinarily large effects on traffic improvement and air pollution reduction in the city as a whole. Most of the benefits yielded by these projects were benefits to users, such as reduced travel time and transport costs enabled by the alleviation of congestion. From this evaluation it can be inferred that the projects had a substantial impact on people's lives and economic activity. The magnitude of these effects varies between projects, but they appear to be broadly equal in value to the effects anticipated at the time of the appraisal. It was also inferred that projects of this kind have significant effects, in reducing environmental burdens such as CO₂ and NO_x. It also appears that these multiple projects have synergistic effects, yielding a large overall impact.

2) Response to Localized Traffic Concentrations

In general, efforts are made to improve traffic and the environment in an entire urban area through partial improvements to transport systems, yielding the kind of overall effects described above. At the same time, localized traffic concentrations inevitably occur. The planning and design of traffic facilities must give due consideration to aspects such as reduction of traffic congestion, and localized environmental degradation, as well as traffic safety. As far as can be seen from the results of micro-simulations conducted for some intersections, it is unlikely that these projects caused any local major problems.

However, for this evaluation a detailed field survey of the technical aspects of these points, making a full confirmation impossible, was not able to be conducted. According to a questionnaire survey of residents etc., some pedestrians are calling for local improvement in traffic safety measures. Future ex-post evaluation work should include a survey of that kind of technical aspect.



3) Points Which Should be Added to Future Evaluation Work

The Philippines frequently suffers from bursts of torrential rain, which makes it extremely important to ensure adequate rainwater drainage of the facilities. The questionnaire survey and workshops reported numerous problems with flooding due to poor drainage, although the causes appear to involve many factors besides problems in the planning and design of the projects. A detailed survey of the technical aspects involved should be conducted and the findings reflected, where necessary, in the planning and design of future facilities. Problems were also pointed out regarding the treatment of excavated earth from the construction work, and litter discarded by local residents and road users. It should be noted that such points were not always given adequate consideration in this survey. The planning process should be made more flexible, so that points requiring detailed technical examination can be selected rapidly and added to investigation plans.

The workshops for this evaluation did not yield very strong opinions in areas such as road noise countermeasures, road beautification and planting and improvement of the pedestrian environment, and the residents do not perceive serious problems, but in cases where the facilities under evaluation will be used for decades, such matters should be taken into account as problems which could emerge in future.

2 Summary of the Specific Effects of the Evaluated Projects

1) Main Effects Observed Through Quantitative Analysis

The results of a quantitative analysis comparing project effects with the case in which the project had not been implemented, on the basis of a transport simulation, showed that all the projects yielded extremely strong effects, as summarized below. In a city such as Metro Manila, there is an overwhelming shortage of transport infrastructure, the investment effect of building transport infrastructure are extremely high.

1. Economy

The Economic Internal Rate of Return (EIRR) for the subject projects is 33% overall. The specific EIRR for road construction and improvement projects is 48%, and that for intersection improvement projects is 24%. These figures indicate that the economic efficacy of the evaluated projects is extremely high.

2. Improvement of Traffic Conditions

Compared to the case which supposed that the project had not been implemented, the average congestion rate in the Metro Manila area was reduced by 10% and the average drive speed was increased by 7%. These results mean that the subject projects improved the traffic network in the whole of the Metro Manila area, contributing to improved traffic conditions not just in areas along the roads concerned, but in the whole region.

3. Environmental Improvement Effects

A similar comparison against the case where the projects were not implemented showed the improvement of the automobile driving environment produced reduction rates in emission volumes of atmospheric pollutants of 3.0% for SO_x, 4.2% for CO₂, 0.6% for NO_x and 1.7% for SPM (suspended particulate matter).

2) Main Effects Observed Through Social Study

In this study, the traffic simulation analysis described above was supplemented by workshops with concerned parties, and the suggestions expressed in those workshops were referred to in the conduct of a social study. The social study was a wide-ranging examination of the social impact of the projects, including changes in urban activity along roads, interview surveys of users, interviews with residents living along road routes, and case studies of resident relocations related to land acquisition. The results of the social study revealed some points where there was scope for improvement, such as road

safety and the fairness of procedures related to land acquisition, but overall the evaluation of the subject projects gained from users and roadside residents was clearly positive. The major results are stated below.

1. Improvement of Mobility and Accessibility

The results of the questionnaire surveys of the users and roadside residents showed that more than two thirds of the respondents answered that the projects had enhanced mobility and accessibility in the Metro region. Both users and roadside residents were highly satisfied with these projects.

2. Traffic Safety

It is difficult to accurately grasp the road safety situation due to the lack of data on road accidents. Road accident statistics which are available for the multi-level conversion of EDSA (Epifanio de los Santos)/ Shaw road indicate that the accident rate on that road dropped to around half. In the questionnaire of road users, over 60% of respondents gave the projects a favorable evaluation for their contribution to road safety. Therefore it can be judged that these projects have produced an overall improvement in road safety through the improvement of intersections, the installation of signals, new road construction and widening accompanied by sidewalk improvement, and other measures. However, in the interview survey of communities along road routes, a majority of residents expressed fears over road safety. This level of concern indicates the importance of considering the road safety of residents living along the road routes.

3. Increase of Job Creation

Comparing areas where there was new road construction or improvement between 1980 and 1996, there were major increases in population and employment opportunities, particularly the latter. However, the region of the project along the northern coastal section of R10 was the only one of the evaluated projects where the growth in employment opportunities over the period (1.6 times) fell below the trend for the Metro Manila region as a whole (an approximate doubling of opportunities). Considering the fact that the project concerned was expected, at the time of the appraisal, to yield urban development effects, it is hardly a satisfactory result. Road construction is certainly an important trigger for regional development, but for it to actually lead to urban development it requires a comprehensive view, incorporating economic incentives such as preferential tax treatment, relaxation of land usage regulations and loans with low interest rates.

3 Evaluation Methods Employed in this Study

1) Study Report

The report as a whole and the survey and analysis work which it is based on are largely relevant. However, there appeared to be room for improvement in the writing and presentation of the report prepared by the local consultant which handled the social study. In order to make full use of participatory methods in a range of situations, there is no alternative to the use of local consultants for social studies, but efforts must be made to find capable consultants.

2) Characteristics of This Study

The key characteristic of this study is that its objective evaluation methods, based on engineering and economic approaches, were backed up by other methods intended to involve anyone who had been affected by the projects in the course of the evaluation. The methods used include workshops between interested parties and opinion hearings and questionnaire surveys of the widest possible range of road users and roadside residents. This approach makes complementary use of the objective evaluation with the subjective evaluation provided by beneficiaries, enabling the study to go beyond a simple yes/no check

of the project effects. This type of study was able to examine specifically what kind of effects the projects had, and what problems require future improvement. The findings of the study were presented in an easy comprehensible form.

3) Effects of Introducing the Workshop Method

The workshop method, which was used experimentally in this study, gathered together interested parties from related government agencies and NGOs to discuss matters such as the evaluation methods and results. It is largely equivalent to methods for bringing in public contribution in areas such as environmental impact evaluation. Such methods are currently popular, at least in developed countries, in the implementation processes of public works and other large-scale projects. Their full-scale implementation involves numerous problems, as will be described below, but the method merits a forward-looking approach to its future use to make constructive use of its functions. In this study the users offered many constructive opinions from their perspectives on matters such as specific intersection improvements and the phased construction of roads while leaving the median strip intact. Their opinions will be of reference for future projects, and the workshops functioned to some extent to gather comments on the evaluation results from more ordinary perceptions.

4) Problems to be Tackled in the Implementation of Workshops

The issues identified from the experience of workshops in this project are described below.

- a. The purpose of the workshop must be clearly stated in advance. The purposes are diverse, such as identifying the problems involved in various aspects of projects implemented with finance from the Japan Bank for International Cooperation (JBIC), and gaining knowledge that can be of reference to future policies under JBIC authority. If the purpose is not clear, the debate can become disjointed, or time can be wasted on futile discussions of problems which are, systematically, beyond the responsibility of JBIC. In particular, the second workshop session appears to have turned into something at odds with its intended purpose. Discussions before the workshop on what it was meant to get from the participants, and how the results were to be used in technical and social evaluation, were inadequate. That failure is something that the Third-Party Evaluation Committee should reflect on.
- b. Participants must be selected cautiously from diverse fields. In this workshop many of the participants came from an NGO which was only interested in the land acquisition issue, and there was almost no participation from ordinary drivers, bus operators, distribution operators and the other road users and industrial and commercial businesses along the routes. This composition left the discussion of the workshop prone to bias. Particularly in the 2nd workshop session, even participants from the Department of Public Works and Highways (DPWH) and other government agencies lacked knowledge of disciplines such as road engineering and transport engineering. As a result there were no constructive opinions reflecting expert knowledge or the knowledge of engineers responsible for the regions concerned. The absence of any knowledgeable people who could discuss important points going beyond current problems to future issues limited the perspective of the workshop.
- c. Positive support from the executing agency is required. JBIC offered advice to the executing agency at the implementation stage, but in particular it was not in a position to contribute directly to land acquisition and the relocation and compensation of residents. It was the job of the executing agency to keep a grip on those matters, and the executing agency's contribution is needed to ensure more realistic implementation. The themes to be examined by the workshop and the method for running the workshop should be discussed thoroughly with the project executing agency, and carried out with the cooperation of the executing agency, to make sure the results of the workshop will be put to effective use in the planning, design and implementation of future projects.
- d. Participatory process, though carrying out repeated workshops, is useful to build a consensus over the purpose and

methods of the project and nurture public opinion and goodwill. It is used increasingly often in developed countries as an appropriate method for planning projects and choosing between candidate plans. There is scope for JBIC to consider the application of participatory processes in the planning and other stages of its projects *. The purpose, role and process etc. of participatory processes in evaluation shall be now reconsidered.

*** [JBIC's view]**

JBIC is fully aware of the necessity and importance of participatory process, and requests borrowers and executing agencies to take steps to ensure that the voices of all the stakeholders are reflected in all stages from project planning onwards.

- e. Expertise on methods for public involvement already exists. If this kind of method continues to be used in future, it would be more efficient to call on the cooperation of transport-related project executing authorities in Japan, which already have some experience in this field. Furthermore, when JBIC considers introducing public involvement methods in the planning and implementation stages of each individual project in future, it should proceed cautiously while making full use of the real field experience of public involvement that is to be found in those authorities.

4 Suggestions on Future Directions

1) Stronger Management of Roads

The question of how to manage, operate, maintain and renew the facilities and equipment of a completed project is a very important one, directly linked to the efficacy of the project itself. For example, in some areas the function of traffic signals deteriorated due to a shortage of spare lamps for the signals. Beyond financial ability, the executing agency needs to have a stronger overall management system to deal with such aspects. To that end it would be effective to encourage further technical cooperation to strengthen systems for road-specific funding sources and road management systems.

2) Stronger Monitoring of the Traffic Environment and Traffic Safety

The lack of data on air pollution and road accidents limited the accuracy of this evaluation work. In particular, it was very common for the police to lack data they should have investigated and collated on road accidents. The executing agency should take action to increase the number of measurement monitoring points or enhance status monitoring systems for the facilities, in order to check the realization of project effects after completion and to manage the operation of the facilities appropriately.

Future planning and evaluation should be borne in mind at the planning stage of the project, and a plan package for those aspects should be adopted.

3) Evaluation Indices for Transport Services are Needed

Indices should be developed that can be used to evaluate the performance of transport systems from the point of view of user services and express that performance in a clearly understandable form. Indices could include changes in delay times at intersections, changes in times taken to reach major facilities, and public satisfaction indices. Besides being useful in before and after evaluation of projects, such indices would be effective in keeping ordinary users informed of the everyday state of traffic in the city.

4) Problems with the Acquisition of Project Land

The relocation of residents (including squatters) when project land is acquired has become a major problem in the implementation of projects. In the workshops, the interest of the NGOs and other participants was mainly focused on this issue, but it is a deep-rooted and intractable problem in the Philippines, involving issues of income disparities, housing deterioration and public health. It can certainly not be solved by transport projects alone. However, it is clear that the land acquisition problem is a major restriction to the wider reflection of project effects in society. At the same time, the disaffection caused among the public by land acquisition problems is not just directed at the executing agency. Although there is no legal basis, their disaffection could also be directed at the loan provider, JBIC, and, by extension, at Japan. Considering the situation, we earnestly hope that the best efforts of the Philippines government are backed by fair and appropriate action taken by the executing agency in the land acquisition process.

While this problem arises individually in every project, it is not something that should be solved individually. Instead it should be dealt with by comprehensive planning methods such as Japan's urban planning systems and land usage plans for zoning and redevelopment programs. However, these systems and methods have only just got under way in the Philippines. When projects are selected, it is vital to provide advice on the preparation of those projects, and to receive guarantees from counterparts that the problems will be solved.

5) Qualitative Improvement in Transport Facilities Towards Future

At present there is a lack of appurtenant facilities to enhance amenity, such as areas of greenery, tree lined streets, sidewalks of adequate width, pocket parks and the like. This problem is compounded by people's lack of interest in such things. JBIC should consider providing advice on the addition of such amenity-improving appurtenant facilities at the appraisal stage, even if the counterparts are not well aware of such things.

6) Assistance for Policy Formation in order to Improve Systems for Sustainable Infrastructure Development

It became clear that all the transport infrastructure projects evaluated here had provided users with added convenience. Asking the users who are the direct beneficiaries to bear a reasonable burden appears to be an appropriate method for sustainable infrastructure development. To that end, for example, a portion of the gasoline tax could be designated for infrastructure, or, on roads where it is possible, a toll road system could be introduced to collect tolls. Such measures have to be considered, but due consideration must also be given to fairness of the burden and protection for the weak. When ODA loans are provided, assistance should also be given for policy formation on the use of a systematic approach or of a combination of methods.

7) Future Development Towards the More Effective Use of Implemented Projects

The workshops run for this study brought together interested parties to gather their opinions on the evaluation of the subject projects. The workshops also aimed to make those concerned on the Philippines side consider ways to make better use of the projects by solving problems of maintenance and other localized issues, and to confirm where responsibility lies. However, due to time constraints it was not possible to fully realize these objectives. More thorough ongoing study and investigation should be pursued in cooperation with the parties on the Philippines side to deepen understanding of those points.

Table 1 List of Evaluated ODA Loan Projects

Project Name	Project Summary and ODA Loan
1. Metro Manila Traffic Engineering and Management Project (II)	<ul style="list-style-type: none"> • Project Summary: Continuation of existing projects. Covered 170 intersections, mainly within C4 (including some outside C4). Support for both hard and soft aspects. • Loan Amount: · 3,860 million / Loan Disbursed Amount: · 3,773 million • Exchange of Notes: May 1982 / Loan Agreement: May 1982 • Terms and Conditions: Interest rate: 3%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: May 1988
2. Metro Manila Radial Road No.10 and Related Roads Project	<ul style="list-style-type: none"> • Summary: Combines five projects on Radial Road No. 10 (R10) and related Circumferential Roads Nos. 2, 3 and 4 (C2, C3 and C4). • Loan Amount: · 5,400 million / Loan Disbursed Amount: · 2,123million • Exchange of Notes: July 1983/ Loan Agreement: September 1983 • Terms and Conditions: Interest rate: 3%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: February 1994
3. Circumferential Road No.3 Construction Project	<ul style="list-style-type: none"> • Summary: Construction and improvement totaling 9.8km on four sections of C3 (8, 9, 10 and 11) and two sections (2, 3) of the Makati - Mandaluyong Road. • Loan Amount: · 1,439 million / Loan Disbursed Amount: · 964 million • Exchange of Notes: December 1985/ Loan Agreement: May 1986 • Terms and Conditions: Interest rate: 3.5%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: May 1994
4. Metro Manila Circumferential Road No.5 and Radial Road No. 4 Construction Project	<ul style="list-style-type: none"> • Summary: Construction of 18.957km of road sectors omitted from C5 and R4. • Loan Amount: · 4,837 million / Loan Disbursed Amount: · 4,447 million • Exchange of Notes: December 1987 / Loan Agreement: January 1988 • Terms and Conditions: Interest rate: 3%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: April 1997
5. Metro Manila Traffic Engineering and Management Project(III)	<ul style="list-style-type: none"> • Summary: Installation of signals on 127 intersections, installation of CCTV on major junctions along the C4, and installation of an air pollution monitoring system, mainly on the outer side excluding Makati of C4 (EDSA). • Loan Amount: · 4,611 million / Loan Disbursed Amount: · 4,493 million • Exchange of Notes: December 1987/ Loan Agreement: December 1988 • Terms and Conditions: Interest rate: 3%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: April 1995
6. Metro Manila Urban Transportation Project	<ul style="list-style-type: none"> • Summary: Construction and upgrading of 32.5km of primary and secondary trunk roads. • Loan Amount: · 4,776 million / Loan Disbursed Amount: · 3,296 million • Exchange of Notes: December 1988 / Loan Agreement: May 1989 • Terms and Conditions: Interest rate: 2.7%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: September 1998
7. Metro Manila Interchange Construction Project (I)	<ul style="list-style-type: none"> • Summary: Interchange construction at intersections of EDSA/Pasay Road, EDSA/Ayala Avenue, R.Magsaysay / Nagtahan. • Loan Amount: · 2,304 million / Loan Disbursed Amount: · 2,276 million • Exchange of Notes: October 1989 / Loan Agreement: February 1990 • Terms and Conditions: Interest rate: 2.7%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: May 1998
8. Metro Manila Interchange Construction Project (II)	<ul style="list-style-type: none"> • Summary: Interchange construction at intersections of EDSA/Shaw Boulevard and EDSA/Boni Avenue • Loan Amount: · 1,663 million / Loan Disbursed Amount: · 1,512 million • Exchange of Notes: March 1991 / Loan Agreement: July 1991 • Terms and Conditions: Interest rate: 2.7%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: October 1998
9. Metro Manila Roads Pavement Rehabilitation Project	<ul style="list-style-type: none"> • Summary: Rehabilitation and improvement of dilapidated paving and drainage facilities along 34.2km of trunk roads. • Loan Amount: · 1,795 million / Loan Disbursed Amount: · 1,258 million • Exchange of Notes: March 1991 / Loan Agreement: July 1991 • Terms and Conditions: Interest rate: 2.7%, Repayment period: 30 years (10 years for grace period) • Final Disbursement Date: September 1998
10. Metro Manila LRT Line 1 Capacity Expansion Project	<ul style="list-style-type: none"> • Summary: Purchase of new rolling stock and upgrading of existing rolling stock and railway facilities. • Loan Amount: · 9,795 million / Loan Disbursed Amount : · 8,706million • Exchange of Notes: November 1994 / Loan Agreement: December 1994 • Terms and Conditions: Interest rate: 3%, Repayment period: 30 years (10 years for grace period) • Under disbursement



Congression Avenue



Flyover (EDSA - Ayala Avenue)



Light Elevated Railway
(where it crosses EDSA)



Signals Installed on the Junction of
EDSA and Taft Avenue