

Philippines

Metro Manila Air Quality Improvement Sector Development Program

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Field Survey: December 2004

1. Project Profile and Japan's ODA Loan



Project site location map



Exhaust gas test equipment introduced via the project

1.1 Background

In response to the concerns that the Asian currency crisis, which rocked the region at the end of 1997, would widen a deficit in Philippines' balance of payments and that a devalued peso and an increase in foreign currency-denominated debt would increase its fiscal deficit, measures to mitigate the adverse effects from the crisis was urgently needed. Moreover, the country was facing various environmental problems, which had arisen with population growth and economic development and air pollution particularly in Metropolitan Manila and its surrounding areas, had become a serious issue. Experts were forecasting dramatic increases in air pollution from both mobile sources (i.e. vehicles) and stationary sources (i.e. industrial), the two major causes of pollution. It was concerned that the effects of the pollution would worsen further without appropriate policy actions and the sustainable development of both economy and society could be stymied.

1.2 Objectives

The first objective of this project was to stabilize the balance of payments of the Philippines, a country which adversely affected by the Asian currency crisis, through the provision of a dedicated loan under the New Miyazawa Initiative (NMI), thereby contributing to the stability of the domestic economy. As the second objective, the project intended to further improvement in air quality management by providing support for relevant policy reforms¹ under the Air Quality Action Plan (AQAP), thereby contributing

¹ This project was co-financed by the Asian Development Bank (ADB) with the total package comprising: 1) a policy-based loan, 2) an air pollution control loan, 3) a public investment support loan, and 4) a technical assistance grant. The project was designed to support the implementation of AQAP via the policy-based loan co-financed with the ADB.

to improve air quality management in Metro Manila and its environs.

1.3 Loan Agreement/Executing Agency

Government of the Republic of the Philippines / Department of Environment and Natural Resources (DENR), Department of Transportation and Communication and others

1.4 Outline of Loan Agreement

Loan Amount/ Disbursed Amount	36,300 million yen/36,300 million yen (total) 24,200 million yen/24,200 million yen (Phase 1 tranche) 12,100 million yen/12,100 million yen (Phase 2 tranche)
Exchange of Notes/Loan Agreement	March 1999/March 1999
Terms and Conditions	
-Interest Rate	0.75%
-Repayment Date (Grace Period)	40 years (10 years)
-Procurement	General untied
Final Disbursement Date	December 2003
Main Agreement	-
Contracted Consultants	-
Feasibility Study (F/S), etc.	Metro Manila Air Quality Control Strategy: 1994, United Nations Development Program (UNDP) /World Bank TA (Technical Assistance Project for Air Quality Improvement): 1997, Asian Development Bank (ADB)

2. Results and Evaluation

2.1 Relevance

2.1.1 Relevance of project plans at appraisal

(1) Closing a deficit in the balance of payments and stabilizing macro economy

The Philippine economy was adversely affected by the Asian currency crisis. Measures to close a deficit in the balance of payments (i.e. a better access to foreign currencies) and, in turn, to stabilize macro economy were matters of great urgency and important for the national government.

(2) Improvement of air quality management

The five-year Medium-Term Philippine Development Plan (1993-1998) at the time of appraisal outlined the necessity of policy actions to ease the environmental problems from population growth and economic development. Air pollution, particularly in Metro Manila and its environs, increasingly became a serious problem. Thus, in order to

Japan's ODA loan was disbursed in two tranches (Tranche 1 and Tranche 2) on the basis of the progress of policy-based improvements as general import settlement funds, with the aim of improving the balance of payments and mitigating the adverse effects of the currency crisis on the Philippine economy.

implement policy reforms and measures on air quality management, the government drew out an air pollution control strategy in 1994, which was developed into the Air Quality Action Plan (AQAP) in 1998. Therefore, this project was highly relevant in that it intended to improve air quality management in Metro Manila and its environs on the basis of the AQAP.

2.1.2 Relevance of project plans at evaluation

(1) Closing a deficit in the balance of payments and stabilizing macro economy

Since the Asian currency crisis, the Philippine economy has been on a moderate recovery trend, and this project was granted priority status in that its objective was to improve the country's balance of payments and secure foreign currency reserves.

(2) Improvement of air quality management

The current five-year Medium-Term Philippine Development Plan (2004-2010) identifies the implementation of measures to address air pollution in Metro Manila as a key policy issue. Moreover, the plan makes specific reference to the need for the smooth implementation of the AQAP as a means of alleviating air pollution in Metro Manila and its environs and aims at bringing air quality to acceptable levels. Accordingly, the project has maintained its relevance in that its objective was to facilitate the implementation of the AQAP.

2.2 Efficiency

2.2.1 Outputs

An outline of the project and demarcation with the Asian Development Bank (ADB), co-financier of the project, are shown in the table below. There were no deviation from the original scope, which covered both the policy-based loan and the assistance for policy reforms in line with the AQAP.

Table 1: Project profile and role-sharing arrangements with the ADB

Project components	Funding source
1) Policy-based loan (program)	JBIC (US\$300 million) ADB (US\$200 million)
a) Funds for import settlement	
b) Counterpart fund	
- Project (AQAP) costs	
- Local currency costs for other JBIC or ADB projects	
- Other development project costs	
2) Air pollution control loan (project)	ADB (US\$25 million)
3) Public investment support loan (project)	ADB (US\$71 million)
4) Technical assistance grant (project)	ADB (US\$1.5 million)

The following eight conditionalities² were chosen from policy reforms in the AQAP³. The second tranche of project fund would be released these conditionalities had been met. As mentioned in “2.3 Effectiveness”, all eight conditions were met and the second tranche was released in December 2003.

- a) Development of the legislature necessary for air quality management (establishment of the Clean Air Act)
- b) Gradual implementation of the vehicle inspection system
- c) A ban on sales of leaded gasoline in Metro Manila
- d) Enhancement of the function of the DENR Pollution Adjudication Board (PAB)
- e) The shutdown of base-load operations at two obsolete oil-fired power plants
- f) The operational startup of an air pollution monitoring system
- g) The development and implementation of an action plan for public awareness campaigns
- h) The execution of the necessary budgetary measures to facilitate AQAP implementation

The funds for the import settlement component of the project (both first and second credit-tranche funds) were used to cover purchases of fuel and crude oil between the second half of 1998 and the first half of 2000.

2.2.2 Project Period

This project was to be completed upon the release of the second credit-tranche fund, which was subjected to of the fulfillment of the above eight conditionalities. Under initial plans, it was expected to start in March 1999 and to be completed at the end of 2002; however, in fact, the project delayed for approximately one year and was completed in December 2003. This delay was caused by the time required to determine whether some of the conditionalities for the release of the second credit-tranche fund had been fulfilled.

2.2.3 Project Costs

Project costs were divided into the first and second tranche funds and released as planned.

2.3 Effectiveness

(1) Improvement in the balance of payments and the stability of foreign currency reserves

² AQAP intends to facilitate effective air pollution control and to mitigate air pollution and was broadly divided into efforts to 1) mitigate air pollution from mobile sources (strengthen enforcement capabilities for emissions regulations, improve fuel composition, reduce exhaust emissions from vehicle use, alleviate traffic congestion, strengthen traffic control systems); 2) mitigate air pollution from stationary sources; 3) strengthen air monitoring capacity; 4) implement public awareness campaigns; 5) coordinate AQAP initiatives with appropriate monitoring activities; and 6) strengthen the institutional capabilities of the executing agencies (for details, see Table 3). The eight conditionalities were assigned to those initiatives that were deemed to be of particular importance.

³ Effectuation of the loan contract was contingent on these eight conditionalities. The release of funds from the divided credit line (tranche) was authorized upon confirmation that these conditionalities had been met.

To address the concern that the currency crisis would reduce access to foreign currencies, JBIC and ADB cooperated in the provision of funds for import settlement (medium and long-term loans) with the aim of stabilizing the balance of payments and of securing foreign currency reserves.

Table 2: Balance of payments and foreign exchange reserves

(Unit: million US\$)

	1997	1998	1999	2000	2001	2002	2003	2004 ¹
Overall balance	-3,363	1,232	3,586	-513	-192	663	111	-246
(Amounts provided by JBIC/ADB)		(100)	(200)				(200)	
Capital account balance	6,593	987	-2,333	-4,119	-1,080	-1,644	-5,319	-1,245
Current account balance	-4,351	2,462	7,219	6,258	1,323	4,383	3,347	1,410
Foreign exchange reserves	8,768	10,806	15,107	15,019	15,645	16,171	16,865	16,028
Months of import coverage	2.0	3.1	4.5	4.2	4.6	4.7	4.7	4.1

Source: Central Bank of the Philippines

Note 1: Balance of payment figures are for the third quarter.

As shown in Table 2, the balance of payments (on overall balance basis) in the years that funds were provided through this project (including those co-financed by the ADB) was US\$1,232 million in fiscal 1998, US\$3,586 million in fiscal 1999, and US\$111 million in fiscal 2003, suggesting that these funds contributed to improvements in the balance of payments during the period of economic recovery after the currency crisis.

Moreover, at the time of appraisal, the official target for foreign currency reserves was to secure US\$12.9 billion by fiscal 1999, or 3.1 months of import cover. In fact, foreign currency reserves reached US\$10.8 billion or 3.1 months of import cover in fiscal 1998, rising to US\$15.0 billion (4.5 months) in fiscal 1999 and then to US\$16.9 billion (4.7 months) in fiscal 2003, indicating that the project also contributed to secure foreign currency reserves during this period.

(2) Use of counterpart fund

The fund withdrawn from this project were accumulated in local currency in a special account held at the central bank in order to be utilized to cover: 1) AQAP implementation costs (local currency portion), 2) the local currency portion of ongoing yen-loan projects, and 3) the costs of other government development projects, in that order of precedence. Results for the first credit-tranche fund reveal that: 1) approximately P1.67 billion was allocated to the AQAP implementation budget, 2) approximately P7.74 billion to cover the local currency costs of 57 yen-loan projects undertaken between 1999 and 2002, and 3) approximately P700 million to the local currency costs of World Bank and ADB projects.

(3) Policy reforms in the Air Quality Action Plan (AQAP)

The major policy reforms implemented in line with the AQAP are shown in the table below. All eight of the conditionalities⁴, which were considered some of the most important policy actions in the AQAP, have been appropriately achieved.

Table 3: Specific policy improvements affected under AQAP

(a) Initiatives to mitigate pollution from mobile sources	
a. Establish a motor vehicle inspection and emission testing system (MVIETS), strengthen vehicle emission enforcement capabilities	
(Improve policy/legislation)	
<ul style="list-style-type: none"> • Decision on the motor vehicle inspection system • Revision of government ordinance on the vehicle inspection and emission testing system (MVIETS) 	<p>Studies related to the Motor Vehicle Inspection System (MVIS) were started by the Department of Transportation and Communications Land Transportation Office (DOTC-LTO) in 1998. The LTO subsequently proposed the rehabilitation/private operation of 18 existing test centers⁵ nationwide (F/S completed) and private sector participation in emissions testing that was a part of MVIS. Following this proposal, the DOTC began authorizing Private Emission Testing Centers (PETC) in 2000.</p>
<ul style="list-style-type: none"> • <u>Gradual implementation of MVIS</u> 	<p>Currently, 323 PETC have been set up nationwide with 254 in Metro Manila. These PETC have expanded testing capabilities and are conducting the emissions tests required for the annual renewal of motor vehicle registrations (MVR). Meanwhile, an F/S on the feasibility of motor vehicle inspections (MVI) being performed at LTO test centers has been completed; the proposal is to have private-sector participation under a rehabilitate – loan – operate (RLO) system. Accordingly, a complete MVIS system has yet to be achieved, however, since the condition for second tranche release was the gradual implementation of the MVIS, the condition was judged to have been partially fulfilled⁶.</p>
(Strengthen functional and institutional capabilities)	
<ul style="list-style-type: none"> • All privately-owned and commercial vehicles to undergo emissions tests (by June 2000) 	<p>In 2002, DOTC introduced legislation making emissions tests obligatory for all vehicles, including new autos, to undergo emissions testing and receive a Certificate of Compliance (CEC) prior to the annual renewal of motor vehicle registrations.</p>
<ul style="list-style-type: none"> • Metro Manila government organizations to establish and implement anti-smoke belching (ASB) road tests 	<p>In 2000, the LTO, Metro Manila Development Authority (MMDA) and relevant municipal governments began conducting ASB road tests and are enforcing controls on vehicles that exceed emissions standards. Between the start of road test activities and September 2003, ASB road tests were performed on 84,468 vehicles, with the failure rate dropping from 100% in 2000 to 72% in 2003. The LTO is currently carrying out the tests on a daily basis, while in Pasay, Quezon and Makassar municipalities the tests are undertaken 2-3 times a week at evaluation.</p>
b. Reduce exhaust emissions from vehicular use	
(Improve policy/legislation)	

⁴ Underlined sections of the table constitute the conditionalities for the second credit tranche fund.

⁵ These test centers were developed under a JICA grant and were providing testing services for government vehicles prior to the implementation of this project.

⁶ Since the release of the second tranche, equipment for use at LTO-owned test centers has been procured. The plan is to contract out operations to the private sector with the bidding process to start in March 2005, giving priority to the test centers (12) in Metro Manila and its environs, and 2006 as the target for the start of actual test services

• Make fitting of catalytic converters mandatory in new vehicles with petrol engines	The Clean Air Act legislates Euro 1 standard instead of mandating the use of catalytic converter or any other emission control technology.
• Introduce age limit regulations (15 years) for public transportation vehicles	In 1997, DOTC introduced regulations limiting the age of tricycles and taxis to 10 years and that of buses to 15 years.
• Require acquisition of CCES for imports of secondhand vehicles	This was made mandatory by the DOTC in 2001. As of October 2003, the certificates of compliance to emission standards (CCES) had been issued for approximately 36,000 vehicles.
c. Improve fuel composition	
(Improve policy/legislation)	
• <u>Ensure that all commercially-available gasoline is unleaded</u>	In April 2000, the government introduced a complete ban on sales of leaded gasoline in Metro Manila. This ban was enforced nationwide in December of the same year.
• Reduce the sulfur content of diesel fuel	In 2004, the Department of Trade and Industry (DTI) and Department of Energy (DOE) issued a notice stating that the sulfur content has been reduced from 0.2% to 0.05%.
• Study the potential for clean fuel by testing alternative fuels	In 2003, the DOE developed a comprehensive plan to promote the use of compressed natural gas (CNG) in public transport vehicles. A pilot project using public buses as the model is in progress.
d. Reduce traffic congestion and enhance traffic control systems	
(Strengthen functional and institutional capabilities)	
Adopt the proposals outlined in the JICA study (relating to the alleviation of traffic congestion and public transport policy)	The Metro Manila Urban Transportation Integration Study or MMUTIS (JICA), which aims to alleviate traffic congestion and promote the use of public transport and will involve the DOTC in a central role, was developed in 2000 and has been approved by the DOTC.
• Strengthen MMDA traffic control and traffic engineering capabilities and develop training materials	This has yet to be executed, but MMDA is currently looking into reviewing the program.
• Procure equipment for enhancing traffic controls	To date, traffic monitoring equipment (170 walkie-talkies) and vehicles (4-wheeled: 102, 2-wheeled: 66) and traffic signals (at 127 intersections) have been procured.

(b) Initiatives to mitigate pollution from stationary sources	
(Improve policy/regulation)	
• Amend industrial emission standards and increase fines for violations	In 2002, the DENR revised its industrial emissions standards and has decided to increase the maximum penalty from 5,000 pesos/day to a maximum fine of 100,000 pesos/day. To accompany this, in 2003, the DENR compiled guidelines on the application and calculation of fines for air pollution.
• Clarify obligation to submit emissions monitoring reports	In 2004, the DENR made it mandatory for major stationary polluters to compile and submit (signed) reports on the monitoring of atmospheric pollutants.

• <u>Strengthen the function of the Pollution Adjudication Board</u>	An action plan has been developed targeting institutional building and the regional devolution of PAB ⁷ authority. On the basis of this plan, training in the necessary skills and knowledge for pollution adjudication is being provided, the adjudication procedures have been simplified and the staff of regional PAB is being expanded.
• Provide tax breaks to companies that introduce pollution control equipment	The Department of Trade and Industry (DTI) introduced tax deduction measures in 2004.
• Conduct an F/S on the implementation of an emissions tax system	In 2002, the DENR completed a survey on the design of an emissions tax scheme, the contents of which are currently under review.
(Strengthen functional and institutional capabilities)	
• Create a database on sources of industrial pollution	In 2000, the DENR identified and created a database of leading sources of stationary pollution with the aim of expediting status reports on industrial pollution and the timely renewal of emissions licenses.
• Affect quantitative and qualitative improvements in the monitoring of emissions of air pollutant	As of August 2003, the DENR had inspected 279 companies (451 sources of pollution) For wider coverage of inspection, in 2004, it began outsourcing the monitoring of emissions from stationary sources and planned inspections to be undertaken at 960 sources. The consultant is assisting the DENR with the analysis of monitoring data for further improvement. Once this process is complete, it is planned to develop a strategy aimed at strengthening the emissions monitoring and reporting system.
(Other)	
• <u>Shut down two obsolete oil-fired power stations</u>	Operations at the Philippines National Power Corporation (NPC) Sucat and Manila oil-fired power plants were finally halted in January 2002.

(c) Initiatives aimed at enhancing air quality monitoring	
(Strengthen functional and institutional capabilities)	
• Establish an air quality control department with the DENR Environmental Management Bureau (EMB)	A section dedicated to air quality monitoring and data analysis and staffed by employees from the monitoring facilities has been established within DENR-EMB (the Air Quality Management Section: AQMS).
• <u>Startup an air quality monitoring system</u>	Nine air quality monitoring stations have been rehabilitated and equipment (including one air quality monitoring vehicle) procured; the two stations became partially operational in October 2003, and nine stations were partially operational by October 2004 with the exception of one station (the Muntinlupa site). Measuring stations have been automated and air quality data on environmental pollutants is being transmitted to the DENR-EMB.

⁷ Among other things, the PAB has the right to amend/reject administrative orders and decisions issued by the various DENR bureaus and to renew/reject industrial licenses to emit air pollutants.

(d) Enhance public awareness of environmental issues	
(Strengthen functional and institutional capabilities)	
<ul style="list-style-type: none"> Analyze the need for public awareness campaigns; set up a unit for implementing public awareness activities 	<p>The needs analysis was conducted by the DENR in 2002. Further, a Public Affairs Office (PAO) has been set up within DENR in order to lead the public awareness campaigns.</p>
<ul style="list-style-type: none"> <u>Plan and implement public awareness campaigns</u> 	<p>The DENR Environmental Education and Information Division and the PAO are cooperating in the development of a two-year action plan that is slated for implementation in 2002. The DENR has allocated some 47 million pesos for the implementation of public awareness campaigns on air pollution measures, of which 17 million had been spent by the end of 2003.</p> <p>To date, seminars, workshops and conferences have been held for the general public, public transport workers, and other stakeholders; brochures and posters have been created and advertisements (on both TV and radio) have been broadcast.</p> <p>Further, a Dynamic Public Awareness Strategy was developed by the DENR and other relevant agencies in 2002 and is currently being implemented in incremental stages. As of the end of 2003, a clean air month (November 2003) had been held, an air pollution report published, ten slogan billboards set up and a Bike for Clean Air Day (November 2003) held.</p>

(e) Devise a framework for AQAP implementation; coordinate this with monitoring activities	
(Improve policy/legislation)	
<ul style="list-style-type: none"> <u>Develop necessary legislation for air resource management</u> 	<p>The Clean Air Act (CAA) was promulgated in June 1999 and entered into force in July of the same year. Implementation Rules and Regulations (IRR) were established in November 2000.</p>
(Strengthen functional and institutional capabilities)	
<ul style="list-style-type: none"> Coordinate the various sectors via the committees and devise initiatives for program management 	<p>The Metro Manila Airshed Management Board (MMAGB) was established by DENR ordinance in January 2002. It was intended to play a major role in formulation of policies on air quality control and in the development of the action plans required by the relevant agencies, but the Board exists and no detailed regulation has been developed for its activities.</p> <p>Further, the MMAGB is comprised of representatives from the relevant agencies and from the municipal governments⁸ inside the air quality management zone, but since the air quality management zone has not been formally set and no decision has been made on which local governments are covered, hence, in fact, its membership remains provisional.</p> <p>It has been pointed out that even in cases where mediation</p>

⁸ At evaluation, the MMAGB comprised the director general of the DENR, the governors of the relevant provinces, the chairman of the MMDA, representatives from various government agencies (Department of Science and Technology, Department of Education, DOTC, Department of Health, Department of Trade and Industry, Department of Home Affairs, National Economic Development Authority (NEDA), and the DENR Metro Manila, Region III and Region IV-A offices), and representatives from other organizations (NGOs, industry, peoples' organization representatives).

	among the executing agencies is required over the implementation of the AQAP initiatives, the related party has resolved many conflicts by themselves and, in the opinion of the DENR, there is little need for a committee extending over multiple sectors and regions. In fact, this role is performed by the project executive committee (ExeCom) and DENR.
• Execute the necessary budgetary measures for <u>AQAP implementation</u>	In early 1999, the Philippine government allocated counterpart finance worth 280 million pesos to the relevant agencies, of which 171 million, or approximately 60 percent, had been spent by April 2003. According to the DENR, the reason that so little of the initial allocation has been spent is that no significant progress was made in the first two years of the project (consequent upon delays in the consultant bidding and selection process). Moreover, the budget was increased to 1,785 million pesos in April 2003 (the amount estimated to equate to total project costs at completion). This budget is sufficient for implementing the policy-based loan component of this project.
• Introduce and operate fiscal support tools, e.g. an air quality management fund	There were plans to set up and begin operating an air quality management fund in December 2002 (one year ahead of the completion of the policy-based loan component); this fund was intended to ensure the availability of the funds needed to execute the public awareness campaigns and functional improvement activities that had been launched under the AQAP, for the ASB road tests, for the operation of air quality monitoring network facilities, the repair and replacement of other facilities and equipment, and for the running of the various committees. A draft version of operational guidelines was drawn up in October 2002 and revised in November 2004 and the fund is scheduled to become practically operational in fiscal 2005.
• Ensure that the project executive committee is fully functional	A project executive committee (ExeCom ⁹) was set up in 1998 ahead of the start of project implementation. It was authorized to modify the AQAP, but according to the DENR, in many instances, important decisions are delayed because only those officials from the relevant agencies with immediate responsibilities appear at the committee meetings.

(f) Strengthen the capacity and function of the executing agencies	
(Strengthen functional and institutional capabilities)	
<ul style="list-style-type: none"> • Develop measures to strengthen the capabilities of individual agencies • Increase personnel numbers at individual agencies • Implement training activities at individual agencies 	With the exception of MMDA, these initiatives have been carried out essentially as planned. The DENR-EMB has developed a program for institutional capacity building based on an assessment of needs. An action plan targeting greater efficiency in emissions licensing operations and training programs covering 777 items needed to increase the skills of personnel (especially those employed in the local government offices), is being implemented on an as-needs basis.

⁹ The project execution committee comprises the director general of the DENR, the assistant administrator of the Department of Finance, the assistant administrator of the Department of Health, the assistant administrator of the Department of Education, the assistant administrator of the Department of Public Works, the assistant administrator of DOTC, the assistant administrator of the Department of Science and Technology and the assistant administrator of the Department of Trade and Industry.

2.4 Impact

(1) Contributions to economic stability (post-currency crisis economic recovery)

Despite little improvement in the unemployment rate in the immediate aftermath of the currency crisis, further deterioration in growth in Gross Domestic Product (GDP) and inflation was halted and key macroeconomic indicators are on track for recovery. The peso has continued to depreciate against the dollar.

Table 4: Fluctuations in Major Macro Economic Indicators

	1998	1999	2000	2001	2002	2003
GDP growth rate (real))	-0.3%	3.4%	4.4%	3.0%	4.3%	4.7%
Inflation	9.5%	6.8%	4.3%	6.1%	3.0%	3.0%
Unemployment	10.1%	9.8%	11.2%	11.1%	11.4%	11.4%
Dollar exchange rate	39.1	40.3	50.0	51.4	53.1	55.6
Index (95=100)	63.0	65.8	58.5	50.5	49.9	47.5

Source: IMF and Medium-Term Philippine Development Plan

(2) Contributions to ongoing improvements in air quality in Metro Manila

(a) Reductions in ambient concentration of Total Suspended Particulate (TSP)

Mandatory gas emissions testing, which were implemented over the project period, the implementation of improvements in fuel composition, the monitoring of pollution from stationary sources, and development of air pollution-related registrations have improved air pollution over pre-project levels in terms of PM₁₀ emissions and ambient concentration of TSP (both referring to suspended particulate matter)¹⁰, and it is considered that the project has made a certain contribution to these improvements.

Total PM₁₀ emissions had dropped to 71,181 tons in 2001 from 116,359 tons in 1998 and showed a reduction of approximately 39 percent. According to the appraisal documents prepared by the ADB, it was predicted that the projected figure for emissions of PM₁₀ in 2001 of 125,118 tons and the incidence of effects from this project would appear in 2003 or thereafter, but the reductions have reached around 57 percent of the projected level, meaning that the effects to date are greater than those anticipated at appraisal. As regards ambient concentration of TSP (Metro Manila average), although there has been improvement over the levels recorded in 1998, the Philippine national standard (PNS) has yet to be reached. Moreover, as of 2003, ambient concentration of TSP was below the annual average PNS at just one of the ten monitoring sites.

¹⁰ TSP: Total Suspended Particulate, PM₁₀: Particulate Matter; refers to that particulate matter contained in TSP that is 10 micrometers (µm) in diameter or smaller.

Table 5: Ambient concentration of TSP (annual average)

	(µg/Nm ³)			
	1998	2002	2003	National standard
Metro Manila average	181	147	165	90

Source: Executing Agency

(b) Reductions in ambient concentration of Nitrogen Oxide (NO_x)

NO_x emissions from mobile sources had dropped to 4,999 tons in 2001 against 13,418 tons in 1990, or a reduction of approximately 63 percent, in consequence of the mandatory emissions testing, improvements in fuel composition and the introduction of regulations governing imports of used vehicles and public transport vehicles that were tackled under the AQAP. However, there have been delays in the implementation of the initiatives designed to tackle pollution from stationary sources, which have increased from 66,216 tons in 1990 to 109,760 in 2001. The ambient concentration of NO_x (Metro Manila average) was 0.01ppm (parts per million), which clears the national ambient air quality guideline (24-hour average: 0.07 ppm) by a wide margin.

(c) Reductions in ambient concentration of Lead

Gradual reductions in the lead content of gasoline since 1993 (which culminated in a total ban on sales of leaded gasoline in April 2000) have reduced ambient concentration of lead to virtually nil. A decline of around 91 percent from 1997 levels was achieved, meaning that the target of reducing ambient concentration of lead by 100 percent until 2003 has essentially been reached.

Table 6: Ambient concentration of lead (annual average)

	(µg/Nm ³)			
	1987	1997	2000	National standard
Metro Manila average	1.282	0.483	0.041	1.000

Source: Executing Agency

2.5 Sustainability

2.5.1 Feasibility of the ongoing implementation of key AQAP initiatives

(1) Changes in the testing standards of Private Emissions Testing Centers (PETC)

According to the DOTC-LTO (Land Transportation Office), the quality of services provided by the private emissions testing centers (PETC) varies and some are reported to be conducting tests that fail to meet the standards, to be using inappropriate equipment and to be issuing certificates of emission compliance for untested vehicles. Mandatory emissions testing upon the renewal of

Fig. 1: Ex. of PETC equipment



vehicle registrations (annual) and the enforcement of this legislature is necessary to the sustainability of good air quality and is, moreover, critical to preventing a deterioration in the reliability of testing services. The DOTC-LTO and DENR have collaborated in the development of guidelines for PETC services (2003) and are endeavoring to beef up their monitoring of these centers.

(2) Effective implementation of anti-smoke belching (ASB) road tests

At evaluation, LTO was conducting ASB road tests on a daily basis, while the tests were being carried out 2-3 times a week in the municipalities of Pasay, Quezon and Rizal. The Metro Manila Development Authority (MMDA) has already transferred the equipment and vehicles used in the road tests to the respective municipalities, and has terminated its own testing activities. In consequence, the DENR fears that there are now numerous roads not covered by the ASB road tests; however, the DENR is working on a program to coordinate the testing activities of the various executing agencies and is conducting a study on the effective management of test sites.

(3) Operation and Management of Air Quality Monitoring Network Facilities

A budget for the air quality monitoring network facilities that were rehabilitated under the AQAP has already been allocated out of the AQAP execution budget and this is expected to cover the operation and management budget required by the facilities contractor through 2006. Thereafter, the DENR is planning to use the Air Quality Management Fund, which should become available in 2005, to continue repairing and upgrading the equipment and facilities, and the Department hopes that priority will be given to budget allocations for the operation and management of these facilities.

(4) Metro Manila Airshed Governing Board (MMAGB) Operations

As stated in “2.3 Effectiveness”, the DENR-EMB and the project execution committee (ExeCom) have taken the lead in performing the roles that should, by rights, fall to the MMAGB; but given that this Board remains, to all intents and purposes, a provisional arrangement, that many of the policy reform initiatives of the AQAP are already in the implementation stage, and that the various executing agencies have responsibility for their ongoing execution, it serves little purpose in its current form. The MMAGB has no authority over the use of the Air Quality Management Fund and its loss will have no effect on the sustainability of the AQAP initiatives in terms of their financing.

2.5.2 Institutional building and the enhancement of project execution capacity for the lead agency (DENR)

There are no problem in terms of the technical and administrative capabilities of the DENR-EMB, DOTC-LTO and other lead executing agencies in implementing the AQAP initiatives. The DENR-EMB is continuing with its institutional capacity building program. Furthermore, in order to confirm the importance of the formation and evaluation of policy on air quality Management and to improve capabilities in this area, the DENR-EMB set up an Environmental Policy and Planning Department (EPPD) in 2002, which has been in charge with drafting the policies and plans needed to bring about further improvements in air quality management.

2.5.3 Prospects for Air Quality Control Fund Operation

The Air Quality Management Fund, which is to fund various initiatives on air quality management in AQAP, is scheduled to become operational in fiscal 2005. However, the ADB is concerned that anticipated fund revenues (of 300-400 million pesos/year) will not be sufficient to cover future public awareness campaigns, capacity-building activities, the ASB road tests, the repairs and upgrades of equipment for air quality monitoring network and other equipment, and the operations of the various committees.

Guidelines on funding sources¹¹ have already been drawn up, but it is not known whether there will be any additional allocation from the government's general budget. In addition, with the improvements in air quality inevitably leading to a reduction in funding sources from fines, etc., the executing agency is of the opinion that it will be difficult to continue with air pollution control activities¹². As of the end of 2003, the LTO and EMB had accumulated approximately 64 million pesos (in fines imposed for excess industrial emissions, etc.), and it is hoped that efforts will be made to increase funding sources and accumulate capital at the earliest opportunity.

¹¹ Sources of income include emissions taxes on mobile and stationary polluters, penalties imposed for failure to comply with national emissions standards, grants, donations and endowments from the private sector and donor organizations, and the fees collected from the processing of applications for authorization to construct (AC) and permission to operate (PO) stationary pollution sources (as stated in a Joint Memorandum Circular No. 1 issued by the DENR and DBM: Department of Budget and Management in 2004).

¹² According to these operational guidelines, the Air Quality Management Fund does not constitute a timeframe for the attainment of air pollution mitigation targets.

3. Feedback

3.1 Lessons Learned

None

3.2 Recommendations

MMAGB, which was intended to lead both project-related and sector policies and to coordinate the relevant agencies, remains a provisional body and is not performing its mandated roles. DENR and the other relevant agencies need to review the Board's responsibilities and rights, including its membership, and to reconfirm its position within the AQAP framework. When undertaking this task, it is hoped that efforts will be made to reconfirm the relevance and feasibility of achieving air quality management in Metro Manila, which represents an extraordinary difficult task.

Comparison of Original and Actual Scope

Item	Planned	Actual
(1) Outputs	<p>1) Policy reforms to be implemented in line with the Air Quality Action Plan (AQAP) (Conditions for the release of the second tranche)</p> <p>a) Establishment of the Clean Air Act b) Gradual implementation of the vehicle inspection system c) A ban on sales of leaded gasoline in Metro Manila d) Functional enhancement of the DENR Pollution Adjudication Board (PAB) e) Shutdown of operations at two obsolete oil-fired power stations f) Improvements in the air monitoring network system g) Implementation of public awareness programs h) Execution of necessary budgetary measures</p> <p>2) Provision of import settlement funds</p> <p>3) Provision of a counterpart fund</p>	<p>As planned</p> <p>As planned</p> <p>As planned</p>
(2) Project period L/A conclusion Start of AQAP Release of first tranche Release of second tranche Attainment of second tranche release conditions	<p>March 1999 December 1998 March 1999 End of 2002 End of 2002</p>	<p>March 1999 December 1998 March 1999 December 2003 December 2003</p>
(3) Project costs Foreign currency - Phase 1 tranche - Phase 2 tranche Total ODA loan portion	<p>24,200 million yen 12,100 million yen 36,300 million yen 36,300 million yen</p>	<p>24,200 million yen 12,100 million yen 36,300 million yen 36,300 million yen</p>