# Environmental Policy and Road Transportation in the Philippines

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*Although by no means complete, this document is meant to provide a snapshot of various conditions and issues concerning the relationship of the environment to road transportation in the Philippines.*

## 1. CURRENT ENVIRONMENTAL CONDITION

From Table 1 and the given standards for judging the quality of the concentration, it can be seen that several sites indicate unhealthy conditions (exceeding the CAA suggested limits) and even some at the emergency level. These sites are mostly near major thoroughfares such as EDSA and Congressional Avenue. The covered area of these measurements is quite small compared to the rest of Metro Manila. However, since there are observably many areas which exhibit similar concentrations of vehicular traffic, it seems reasonable to believe that these unfavorable conditions exist in a large portion of the metropolis.

Table 1. Ambient Air Quality in Metro Manila (Total Suspended Particulate Matter (µg/NCM), 24-hour sampling, Year-end 2000 Summary)[1]

| Stations | Concentration | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Min-Max Average | Good 0-80 | Fair 81-230 | Unhealthy 231-349 | Very Unhealthy 350-599 | Absolutely Unhealthy 600-899 | Emergency 900 above | Total Samples |
| Valenzuela | 118-295 213.96 | | 20 | 8 | | | | 28 |
| Congressional | 187-921 358.74 | | 2 | 8 | 7 | 1 | 1 | 19 |
| Makati | 73-229 129.21 | 2 | 20 | | | | | 22 |
| East Avenue | 92-277 168.66 | | 29 | 4 | | | | 33 |
| Pag-Asa | 30-237 89 | 9 | 9 | 1 | | | | 19 |
| EDSA-DPWH | 119-398 215.2 | | 16 | 8 | 1 | | | 25 |
| Ateneo | 45-167 85.7 | 13 | 11 | | | | | 24 |
| Las Piñas | 25-199 90.38 | 13 | 16 | | | | | 29 |
| Mandaluyong | 123-203 147 | | 8 | | | | | 8 |
| Pasig | 85-158 129.2 | | 10 | | | | | 10 |

[1] http://www.hangin.org

## 2. PERCEPTIONS OF CURRENT ENVIRONMENTAL CONDITIONS

The results of a survey conducted by Yai, et. al.[2] revealed dissatisfaction among people about the condition of transport services available (in-vehicle) and with the road side environment. Table 1 shows the share of persons who are satisfied with various environmental aspects. As can be seen, in-vehicle conditions are satisfactory to an average of 13.5% of respondents only. Their perception of the road side condition is only slightly better at 21.7%. In contrast, most respondents to the survey said they were satisfied with conditions near their residence. It should be noted that residential villages, gated or otherwise, are very popular in Metro Manila and a large portion of the population live in these villages as they cover 32.4% of total Metro Manila area.

Table 2. Share of persons who expressed satisfaction to various environmental aspects [3]

| | | | | | | |
|---|---|---|---|---|---|---|
| Road Side | Air Environment 16.3% | Congestion 24.9% | Structure 28.8% | Greenery 27.8% | Noise 10.6% | Ave. 21.7% |
| In-Vehicle | Fee 12.3% | Congestion 7.0% | Frequency 18.8% | Temperature 15.8% | | Ave. 13.5% |
| Residence | Air Environment 53.8% | Amenity 46.2% | Peace 68.4% | Community 72.6% | Noise 48.7% | Ave. 59.0% |

In the same study, a correlation was shown between SPM concentrations and with degree of dissatisfaction with the environmental conditions, such as inside and air-conditioned bus, waiting at the stops, inside jeepney and so on.

The low level of satisfaction with the roadside environment and in-vehicle conditions, as shown in Table 2, means that people are hoping for an improvement. The correlation also of their dissatisfaction to SPM means that SPM reduction may improve people's perception of the environmental quality.

## 3. CONDITIONS CONTRIBUTING TO THE PROBLEM

### A. ENVIRONMENT UNFRIENDLY TAX STRUCTURE

At present, the Philippines vehicle tax structure favors older vehicles with lower tax rates. Also, registration rates for older vehicles are also lower than for newer vehicles (which are arguably friendlier to the environment, in terms of lower emission rates).

[2] Yai, Iwakura, Vergel – 4th JSPS Workshop on Impact Analysis of Metropolitan Policies For Development and Environmental Conservation in the Philippines, Nov 20-21, 2001

[3] Yai, Iwakura, Vergel – 4th JSPS Workshop on Impact Analysis of Metropolitan Policies For Development and Environmental Conservation in the Philippines, Nov 20-21, 2001

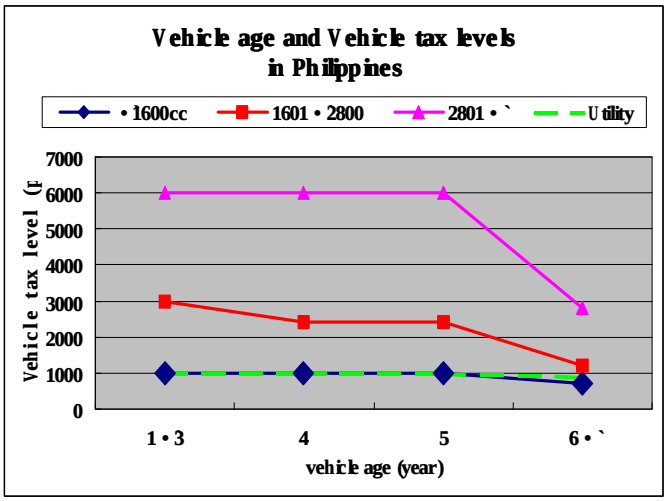

Figure 1. Vehicle Tax depending on Vehicle Age

As an additional note, starting March of this year (2001) taxes are specifically earmarked under the Motor Vehicle User Charge as follows:

80% National projects related to road transport
7.5% Projects related to Vehicle Pollution Control
7.5% Projects for Road Safety
5.0% Provincial or Municipal project related to road transport

However, the first allocation of funds will be made next year. Also, this disbursement is subject to the approval of projects by the Road Board which is comprised of different government and non-government agencies.

## B. LACK OF COMPREHENSIVE INSPECTION AND MAINTENANCE SYSTEM

Motor vehicle inspection in the Philippines focused mainly on the provision of basic safety devices such as headlights and blinkers. But operational performance and handling and pollution are not the main concerns. Until early 2001, only 4 Motor Vehicle Inspection Systems (MVIS) were operational the Philippines which were fitted to cover a wider range of performance tests. However, because of low capacity, only vehicles older than 5 years were inspected, and mostly taxis. Private vehicles were not covered.

## C. USE OF OLD ENGINES

The study of Yai, et. al. revealed that the currently, the majority if not all jeepneys on the road use engines made prior to 1992. This is significant – although jeepneys only account for 12.9 % of vehicle trips in Metro Manila, they carry about 39.1% of Person Trips.[4] The exposure of passengers to the pollution is worth being concerned about.

[4] MMUTIS Study Team. A Factbook on Transportation Strategy and Plan for Greater Metro Manila. Metro Manila Urban Transportation Integration Study, May 2000.

It is indicated that the there may even be some pre-1970 engines may still be in use today. Forty percent of the jeepneys use the Isuzu 4BA-1 engine which ended production in 1984. This age of engines is a reason for concern since older engines produce emission rates much higher than that of newer engines. Also, the low income of jeepney operators does not allow them to run these jeepneys at tip-top condition. Table 3 is worked out from the figures shown in their report.[5]

Table 3. Engines Used in Jeepneys of Metro Manila

| Engine Name | Maker | Manufacture Dates | Share (%) |
|---|---|---|---|
| C-240 | Isuzu | '69-'84 | 6% |
| 4BA-1 | | '71-'84 | 40% |
| 4BC-1 | | '77-'81 | 1% |
| 4BC-2 | | '81-'84 | 25% |
| 4BE-1 | | '86-'88 | 5% |
| 4D-30 | Mitsubishi | '77-'92 | 2% |
| 4D-31 | | '82-'92 | 10% |

## 4. STEPPING TOWARDS IMPROVING THE PRESENT CONDITION

### A. RESEARCH

Preliminary analysis by some studies show that immediate benefits can be derived from simply achieving better inspection and maintenance regimes. For example, a study by the JSPS. [6]

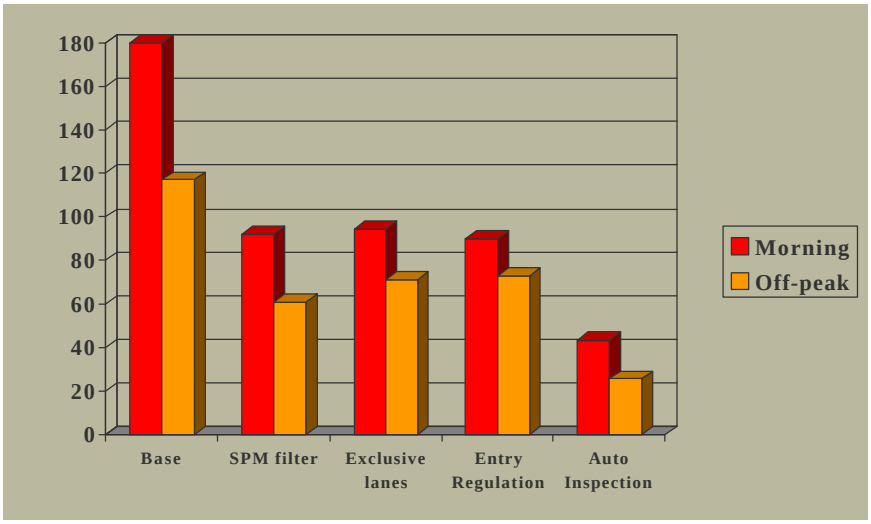


Figure 2. Simulated SPM Exposure Levels for Each Transportation Policy for each Transportation Policy

[5] Figure 4.1.6 of Yai, Iwakura, Vergel – 4th JSPS Workshop on Impact Analysis of Metropolitan Policies For Development and Environmental Conservation in the Philippines, Nov 20-21, 2001

[6] Yai, Iwakura, Vergel – 4th JSPS Workshop on Impact Analysis of Metropolitan Policies For Development and Environmental Conservation in the Philippines, Nov 20-21, 2001

Table 4 shows the simulation settings adopted for use in Paramics (a traffic simulation software) to test several alternative policies in the Makati central business district. Although this simulation is only for a small part of Metro Manila, the results can conceivably be applied to the rest of Metro Manila.

Table 4. Transportation Policy and Corresponding Simulation Settings Used for Implementation in Paramics

| **Transportation Policy** | **Simulation Settings in Paramics** |
|---|---|
| Installation of SPM filters | Reduction of jeepney and bus emission by 80% |
| Exclusive bus and jeepney lanes | Assignment of outermost lane as exclusive lane |
| Entry regulation | Reduction of OD flows to Makati CBD by 20% |
| Automobile Inspection | Set emission rates to Tokyo levels |

B. CLEAN AIR ACT (CAA)

Republic Act (RA) No. 8749, was passed in 1998 enacting laws to protect the environment and is commonly referred to as the Clean Air Act.

The CAA provides for Air Quality Management thru:

- Setting of ambient air quality guidelines and standards
- Emission limits for motor vehicles (effective by 2003) – vehicles which do not comply with emission standards shall not be registered.
- Regulation of importation of motor vehicles and engines to comply with emission limits

Under the CAA, as shown in Table 3, the National air quality guidelines are specified. However, these are subject to review and concerned agencies are supposed to publish a list of pollutants and corresponding ambient guideline values yearly. The CAA mentions the World Health Organization (WHO) guidelines as the minimum level. More stringent guidelines may be adopted instead. [7]

[7] Section 12, Republic Act 8749, Clean Air Act, Philippines

Table 3. CAA National Ambient Air Quality Guideline for Criteria Pollutants[8]

| Pollutants | Short Term | | | Long Term | | |
|---|---|---|---|---|---|---|
| | M g/m$^3$ | ppm | Averaging Time | M g/m$^3$ | ppm | Averaging Time |
| SPM | | | | | | |
| TSP | 230 | | 24 hours | 90 | | 1 year |
| PM-10 | 150 | | 24 hours | 60 | | 1 year |
| $SO_2$ | 180 | 0.07 | 24 hours | 80 | 0.03 | 1 year |
| $NO_2$ | 150 | 0.08 | 24 hours | | | |
| Photochemical oxidants such as Ozone | 140<br>60 | 0.07<br>0.03 | 1 hour<br>8 hours | | | |
| CO | 35 mg/Ncm<br>10 mg/Ncm | 30<br>9 | 1 hour<br>8 hours | | | |
| Pb | 1.5 | | 3 months | 1.0 | | 1 year |

Public Information and Education according to RA 8749

The CAA also encourages the participation of the private sector including non-government and private organizations, academe, environmental groups and other private entities.

Awareness campaign for the transportation sector shall focus on the following:

1. the harmful impact of gas emission on general public and workers in the
2. transportation sector,
3. the technological options available to the transport sector to prevent smoke belching, and,
4. the commitment of the government to fully enforce emission standards through strengthening of apprehension activities.

The advertising industry, broadcasting industry and print media shall participate and cooperate in the formulation and implementation of public awareness raising campaigns (with no profit)

## B. AIR QUALITY ACTION PLAN

This Air Quality Action Plan is under MMURTRIP (Metro Manila Urban TRansport Improvement Project) funded by World Bank

This action plan has a comprehensive range of issues tackled:

- Mitigate air pollution from mobile sources
  1. Establish a motor vehicle inspection and emission testing system (MVIETS)
  2. Strengthen Vehicle emission enforcement capability
  3. Enhance information technology capabilities

[8] http://www.hangin.org a website operated by Partnership for Clean Air, devoted to Air Quality matters

4. Implement capacity building for MVIETS
5. Public awareness campaigns

- Reduce emissions from vehicular use
  1. Introduce emission technology measures
  2. Review import of second hand vehicles and engines
  3. Age limitation for public transportation vehicles
- Reduce traffic congestion and improve traffic flow
  1. Establish transport policies to improve future accessibility and minimize congestion
  2. Increase road capacity
  3. Ensure proper integration of land use and development and transport provision
  4. Improve transport planning process

## 5. REMAINING ISSUES

The most serious problem is related to the political system / decision-making system / implementing system. Programs are very vulnerable to the effects of changes in political leadership. Something needs to be done to insulate the technical progress from the political “upheavals.”