Philippine Review of Economics and Business
Volume XXV, Nos. 3 & 4, September & December 1988

SOCIOECONOMIC CHANGES IN TONDO FORESHORE: AN EVALUATION OF A SLUM UPGRADING PROJECT

By Mayu T. Munarriz*

This paper examines socioeconomic changes brought about by the Tondo Foreshore Development Project to residents' living conditions after project implementation. It compares levels of income, school enrolment and pursuance of high school education, perceived community problems and health conditions before and after project implementation. Significant differences in these variables were found, suggesting that an examination of project feasibility in the light of its socioeconomic impacts permits a realistic and comprehensive method of project evaluation. Thus, socioeconomic impact studies of this type are recommended.

1. Introduction

The only existing evaluations of housing development in the Philippines are on the Tondo Foreshore Project. However, the evaluations do not include any post-test study on qualitative changes. One reason could be the longer observation period required before clear-cut observations can be made. Instead, the project has been evaluated according to increases in land value (NHA, 1983) and structural value (Jimenez, 1983), housing consolidation and rate of turnover of residents (Reforma, 1981), efficiency in serving the target population (Lindauer, 1981) and the cost recoverability of the project and affordability levels of residents (Loanzon, 1978). This study proposes to add comprehension to previous project evaluations by examining the project's socioeconomic impact after it was completed.

The significance of the study is that it will encourage the undertaking of more qualitative post-evaluation studies on development projects and in turn, provide more comprehensive and in-depth information to the Philippine government in coming up with

*The author is indebted to K. Mera of Tokyo International University, her adviser, to T. E. Smith of the University of Pennsylvania, P.H. Tan of Tokyo University and R. Alonzo of the University of the Philippines for valuable suggestions. She acknowledges the National Housing Authority of the Philippines, V. V. Loanzon of the University of the Philippines and E. Jimenez of the University of Western Ontario and World Bank for secondary materials on Tondo Foreshore. This study was partly funded by the Monbusho Scholarship Program of Japan. The views expressed herein are the author's own.

guidelines on urban housing development. In addition, new ideas could be derived for designing urban development schemes, not only for the Philippines but also for other developing countries. This is a case study of the Tondo Foreshore Housing Development and the findings may not be representative of other areas in the country. The study addressed itself to the following question: Does a slum upgrading project bring about improvements in the socioeconomic conditions of residents after its implementation?

Background of Tondo Foreshore Urban Development Project

Tondo Foreshore was the largest squatter area not only in the Philippines, but in all of Southeast Asia before its development. Its boundaries are the following: Vitas River in the North, prewar private lands in the East, Pasig River in the South and North Harbor complex in the West. As a squatter colony, the overall conditions of Tondo were poor. Among those with jobs, 43 per cent had temporary employment. In general, average monthly income (₱371) was lower than average consumption expenditure (₱392). Basic infrastructure, e.g., water supply, drainage systems, health and educational institutions, etc., were lacking. One out of every five housing structures was built out of salvaged materials and because of frequent flooding, 62 per cent were built on stilts. Due to high population density (26,756 households), an average of two households occupied a housing unit. With this, the Philippine government developed the 137-hectare reclaimed land northeast of Manila Bay and introduced the following changes:

1. *Land ownership.* The area was subdivided into individual lots at an average size of 57.6 m^2 (15,000 housing units were reblocked) and amortization at 12 per cent per annum within a 25-year period was granted to the residents without any initial downpayment.
2. Extension of credit through a home materials loan program was provided for the improvement of housing structures and for small-scale business. The maximum loan was ₱3,500 worth of construction materials per family.
3. Service facilities, e.g., individual sewer, water supply connection per housing unit, water drainage system, roads, footpaths and street lighting were provided.
4. Social and economic development programs to promote better education, health, hygiene and environmental sanitation, self-reliance and job opportunities were implemented.

5. Community facilities, e.g., a public high school, elementary schools, health centers, multipurpose centers with open space for recreational activities and vocational job training facilities were constructed or upgraded.
6. The area's industrial and commercial property was developed.

2. Theoretical Framework

2.1 Review of Related Literature

The following studies show that socioeconomic changes could be induced by development projects:

1. Silas (1984) studied the Kampung Improvement Program of Indonesia and showed that the program made improvements on general public works, e.g., roads and footpaths. It was observed that after the footpaths were constructed, individual households along it started planting trees and flowers, provided garbage cans and installed street lighting by using their individual houses' electricity as the source of lighting. In other areas, the residents provided community meeting halls and guard houses. They held periodic communal cleaning activities for the maintenance of their community's environment.
2. Leaf (1983) who studied the development package in a village in Punjab known as the "green revolution" observed the following changes: new varieties of crops and new types of farm tractors were adopted; more of farmers' produce were marketed rather than consumed; well pumps outside of the village were utilized; the flat rate system of work and wages was introduced; clearer definitions of land ownership laws were done and in turn, encouraged villagers to save money to buy extra land; and, membership in the village cooperative became widespread and in turn, facilitated collections against credit.
3. Maynard (1976) evaluated the Muong Phieng Cluster Program in Laos. The program provided improvements in physical and social infrastructures, e.g., roads, schools, medical facilities and rice mills. The following socioeconomic changes were observed: increase in school attendance; increase in livestock sales; shift from the use of horses to motor vehicles; and increase in importance of monetization for transactions.

From the above literature, possible indicators that could determine the socioeconomic impact of a development project are: income, number of income-earners who save, education, health and community problems. The following shows how a development project could induce these socioeconomic changes in an area:

1. *Income and Number of Income-Earners Who Save.* The upgrading of vocational training facilities, hand in hand with socioeconomic programs, allows residents to improve their working skills, acquire more regular jobs and in turn, earn higher income. Further, higher income can mean surplus and in turn, more income-earners can save. Thus, a housing project could bring about an increase in income and an increase in the number of income-earners who save.
2. *Education.* The construction of a high school and upgrading of elementary schools as public goods[1] allow greater affordability on the part of income-earners to send their schooling members to school and in turn, an increase in the proportion of schooling members who go to high school and elementary school and an increase in the proportion of schooling members who continue going to secondary school after primary school could be expected. Hence, a development project could cause improvements in residents' levels of education and. imply higher future income.
3. *Community Problems.* Maslow (1970) discussed man's hierarchy of needs and stated that after man is able to satisfy his physiological needs, he moves on to a higher rank of needs — his safety needs. Then, he goes on to the third level of needs and so on, until he is able to satisfy his highest rank of needs which is self-actualization. The provision of land ownership privileges, improvements of basic infrastructure, hand in hand with socioeconomic programs, could cater to man's basic needs and in turn, cause a shift in residents' perceived community problems — from survival needs to lesser ones. Hence, a slum upgrading project could induce changes in the perception of residents regarding community problems.

[1]Public goods are non-rival and non-exclusive goods and services which have characteristics of lumpiness at low marginal costs. These are free or subsidized goods and services usually provided by the government.

4. *Health.* The construction and upgrading of health centers, together with health improvement programs, could allow greater exposure to health institutions and those in the medical profession and in turn, allow residents to have a better know-how of preventing the occurrence of serious illness and possible deaths. With this, the mortality rate of the community due to sicknesses could decrease. Hence, a housing project could induce better health conditions and contribute to the decrease of mortality rates.

2.2 Hypothesis of the Study

When a housing project introduces a land ownership program, improves community infrastructure and basic facilities, enhances the area's social amenities by establishing or upgrading schools and health centers, and implements programs for better job opportunities and hygiene, differences in the situation of the residents before and after project implementation could be observed and imply an impact of the project. This study hypothesizes that Tondo residents will possess a better socioeconomic condition, e.g., higher income, more income-earners who save, higher school enrolment and greater pursuance of further education, better health conditions and lesser basic problems perceived, after project implementation (1984) than before project implementation (1974).

3. Research Design

To interview the same residents in the community in two different periods is the best method. However, a list of Tondo respondents before the project (1974) could not be availed of and to interview the same respondents after the project (1984) was not possible. Further, only aggregate data on income, number of income-earners who save, education, health and perception of community problems could be taken from the 1974 socioeconomic survey of the National Housing Authority (NHA). Thus, the 1984 data were obtained through a questionnaire survey administered by the author to Tondo residents in early January 1985. The questionnaire was opted over participant observation because it could allow greater objectivity on the part of the researcher (Munarriz, 1981). However, it could not be said to be totally free from response bias, i.e., inconsistency between what is stated and what is done by the respondents. Thus, to countercheck respondents' answers to particular questions, related questions were asked. For instance, income and number of in-

come-earners who save were counterchecked with savings and expenditures, number of members going to elementary and high school with levels of education, and number of members who died due to pneumonia with number of members who had been sick of pneumonia. The questions were grouped as follows: (a) Background of Household, (b) Health, (c) Perceived Community Problems, (d) Education, and (e) Income, Consumption and Saving.

Normally, questions on income, expenditure and saving come after those on background of household. However, in the survey, these questions were placed at the latter part of the questionnaire. Based on the author's past research experiences, respondents were observed to be hesitant in answering subsequent questions if income and saving were asked too early in the interview. The questionnaire was translated into Tagalog and pretested twice before the actual survey for primary data was done. While it was essentially self-administering, sitting down with the respondents allowed a faster rate of return. Also, probing or follow-up questions were facilitated.

Since the housing project was aimed to upgrade the living conditions of families rather than sole individuals, the respondents were either the household head or the member next in line. The respondents were assumed to be most knowledgeable of the conditions of the household and its members and were asked to speak on their behalf.

Usually, with a well-designated data-gathering instrument, a 5-10 per cent sample size of about 1,000-1,500 households could allow reliable findings. Tondo having an extremely large population, less than 1 per cent sample was anticipated to allow significant results and was applied. Tondo respondents were interviewed according to their locality's five major areas. Numbers corresponding to these areas were randomly picked, i.e., the number of times an area was picked was the number of households interviewed in that area.

The author interviewed a sample of 181 Tondo households but, the final analysis used only 53 cases on the basis of families with only one income-earner and who stayed in the area since 1975. This was done to assure us of the respondents' exposure to the before-and-after project implementation, to allow us to compare our data with NHA data which were taken from household heads and whose families had only one income-earner and in turn, allow us to come up with concrete conclusions.

As earlier mentioned, the variables examined were income and number of income-earners who save, education, health and perceived community problems. Income variables were analyzed with respect to real values while saving and education variables (school enrolment and number of schooling members who continue going to high school beyond elementary school[2]) and perceived community problems[3] variables were analyzed through t-tests of difference of proportions. The health variable was examined in terms of pneumonia mortality rate[4] and was compared to the country's trend. In general, Tondo was compared to the situation of Metro Manila and/or the whole country due to the absence of a control group. Data were taken from: the Department of Education, Culture and Sports (DECS), National Census and Statistics Office (NCSO) and National Economic and Development Authority (NEDA).

---

[2]Since schooling members who go to high school could not have been admitted without having gone through elementary school, the number of schooling members going to high school over elementary school, at the time of the survey, was used to determine the proportion of those who continue studying beyond primary level. This method was used because we anticipated that those who had gone to elementary school 10 years before the survey would have graduated from high school by 1984. For purposes of comparison, the same method was used for the 1974 data.

[3]The question for this category was open-ended and the responses were categorized as follows: (a) Basic facilities – electric power and water supply, lack of garbage facilities, poor sewer and drainage systems and poor sanitation facilities; (b) Physical infrastructure – problems on roads, alleys, footpaths and footbridges; (c) Physical environment – problems on cleanliness, congestion, floods, noise pollution and mosquitoes; (d) Social infrastructure – problems on education, health and sports facilities; (e) Land ownership – problem of not being able to own the land one is residing at; (f) High cost of living – problems of food/malnourishment, financing, high cost of house and land rent, employment and insufficient income; (g) Social relationships and community disorder – problems on drug addiction, lack of cooperation, laziness, stubbornness and misunderstandings; (h) No problem stated.

[4]Based on NHA's 1974 survey of the health conditions in Tondo Foreshore, a major cause of death is pneumonia. Compared to other major causes, e.g., tuberculosis and heart disease, the rate of mortality due to pneumonia was found to be extremely higher in Tondo than in Metro Manila. The pneumonia death rates then were 195.7 per 100,000 population for Tondo Foreshore and 69.2 per 100,000 population for Metro Manila. Tuberculosis death rates were 76.2 per 100,000 population for Metro Manila and heart disease death rates were 67.6 and 56.8 per 100,000 population for Tondo Foreshore and Metro Manila, respectively. Thus, pneumonia mortality rate was used.

4. Findings of the Study

This section presents the study's findings on the socioeconomic conditions of Tondo in 1974 and 1984. It compared income, income-earners who save, school enrolment, pursuance of high school education, perceived community problems and pneumonia mortality rates before-and-after project implementation.

4.1 Income

Table 1 gives the nominal and real incomes of Tondo income-earners in 1974 and in 1984. The monthly mean income of Tondo residents increased by about 51 per cent in real value and monthly median income increased by about 56 per cent. Real mean per capita income was about ₱86 in 1974 and about ₱110 in 1984 while real median per capita incomes were about ₱68 and ₱90, respectively. Income-earners may have availed of the improved educational institution and/or the training skills program and improved their education and skill levels and in turn, experienced higher paying jobs in 1984 than in 1974.

4.2 Income-Earners Who Save

Table 2 shows the proportions of income-earners who save in 1974 and in 1984 as not significant ($t = 1.63$; $p < .20$). Comparing

Table 1 — Comparison of Monthly Income of Income-Earners in 1974 and in 1984

	1974 (N=2643)		1984 (N=53)		Percentage Increase in Real Value
	Nominal Value	Real[1] Value	Nominal Value	Real[1] Value	
Mean Income	₱371	₱510	₱2,212	₱772	51.4%
Median Income	292	402	1,800	628	56.2

[1] Real Value is in 1978 prices, using the CPI as deflator.

Sources: 1974 figures, taken from NHA/TFDA Socioeconomic Survey Report of Tondo Foreshore Urban Renewal and Resettlement Project, 1974; 1984 figures were taken from the author's 1984 survey.

Table 2 — t-test of Difference of Proportions of Variables for Tondo Foreshore in 1974 and in 1984

Variables	1974 (N=2643)	1984 (N=53)	t-ratio[1]
Income-earners who save	.380	.491	1.63
Education:			
Population enrolled in elementary school	.185	.566	6.93**
Population enrolled in high school	.069	.547	12.92**
Schooling members who go to high school after elementary school	.375	.967	8.71**
Perceived Community Problems:			
Basic facilities	.200	.094	−1.89
Physical infrastructure	.270	.019	−4.11**
Physical environment	.230	.075	−2.63*
Social infrastructure	.170	.000	−3.27*
No land ownership	.146	.019	−2.65*
High cost of living	.461	.660	2.88*
Social relationships and community disorder	.053	.189	4.25**
No problem stated	.025	.019	− .26

Notes: [1] df = 2694

**p < .001
*p < .01

the percentages of savings depositors in the Philippines (Table 3) and Tondo Foreshore, there is an 11 per cent increase for Tondo within a 10-year period while a 12 per cent increase is observed for the Philippines from 1974 to 1981. Thus, the increase in the proportion of Tondo residents who save could stem from the general increase in the number of depositors for the entire Philippines rather than an impact of the project.

Table 3 — Total Number of Deposit Accounts in the Philippines (1974-1982)

Year	Deposit Accounts	Philippine Population[1]	Percentage of Deposit Accounts
1974	8,981,504	40,757,800	22.04%
1975	9,956,988	41,947,800 (42,071,000)	23.74
1976	11,343,812	43,172,600	26.28
1977	12,629,370	44,433,200	28.42
1978	14,202,660	45,730,500	31.06
1979	15,563,423	47,065,800	33.07
1980	16,468,457	48,440,000 (48,098,000)	34.00
1981	17,540,298	49,854,400	35.18

Notes: [1] Yearly population of the Philippines has been estimated by the researcher based on NCSO reports.

Figures in parenthesis are NCSO data.

Sources: *1984 NEDA Statistical Yearbook:* NCSO, Report on Population.

4.3 Education

Regarding education, Table 2 shows significant increases in the proportion of primary and secondary school enrolment and in the proportions of school age population who go to high school after elementary school between 1974 and 1984 while Table 4 shows the general trend in education of Metro Manila as compared to Tondo Foreshore within the same period. Comparing the proportions of high school bound members, one observes that the proportions in Metro Manila decreased while those in Tondo increased within the 10-year period. The improvement in Tondo residents' education status from 1974 to 1984 may have stemmed from the establishment of a high school and the upgrading of elementary schools

Table 4 — Metro Manila's Yearly Enrolment for Elementary and High School (1974-1984); Tondo's Elementary and High School Enrolment for 1974 and 1984; and Percentage of Schooling Members Who Continue Going to High School After Elementary School

Year	Metro Manila			Tondo Foreshore		
	Elementary School (S_p)	High School (S_s)	$\frac{S_s}{S_p}$	Elementary School (S_s)	High School (S_p)	$\frac{S_s}{S_p}$
1974	742,843	392,125	53%	2,946	1,106	37.5%
1975	760,958	400,829	57	NA	NA	NA
1976	783,890	444,133	57	NA	NA	NA
1977	802,237	467,204	58	NA	NA	NA
1978	864,078	492,013	57	NA	NA	NA
1979	868,046	451,709	52	NA	NA	NA
1981	874,844	471,936	54	NA	NA	NA
1982[1]	1,026,642	508,843	50	NA	NA	NA
1983[1]	1,073,706	525,167	49	NA	NA	NA
1984[1]	1,120,763	541,491	48	30	29	96.7

Notes: [1] The author's projections excluded 1980 figures because of a large deviation from the other statistics on yearly enrolment. This was assumed to have been a misprint in the Department of Education, Culture and Sports (DECS) Report.
NA – not available.

Sources: DECS, Philippine Enrolment Project Program; TFDA, NHA, Socioeconomic Survey Report: Tondo Foreshore Urban Renewal and Resettlement Project, 1974.

in the area. Further, the 59.2 per cent increase in those who entered high school between 1974 and 1984, when converted into monetary terms, means that each of these individuals can have an annual earning of about ₱4,903. This amount is about 60 per cent higher than the earnings of individuals who did not go to high school after elementary school. (See Table 5.) With an increase in the proportion of residents having high school education, greater chances of having more stable jobs in the future and in turn, higher income, become possible.

4.4 Perceived Community Problems

Table 2 also shows that the category "basic facilities" is not significantly different in the two periods, i.e., the basic facilities

Table 5 — Annual Absolute and Relative Wages Earned by Filipinos According to Educational Attainment for 1967, 1976, 1977 and 1978

Level of Education	Absolute Wages (₱)				Relative Wages				
	1967[1]	1976[2]	1977[2]	1978[2]	1967	1976	1977	1978	
No Grade Completed (S_n)	₱1,157	₱2,553	₱2,957	₱2,930	2.03	1.00	1.11	1.05	$\frac{S_p}{S_n}$
Elementary Graduate (S_p)	2,354	2,556	3,282	3,073	1.06	1.58	1.48	1.60	$\frac{S_s}{S_p}$
High School Graduate (S_s)	3,777	4,039	4,863	4,904	1.41	1.26	1.29	1.25	$\frac{S_u}{S_s}$
College (S_u)	5,310	5,080	6,276	6,148					

Notes: [1] Figures taken from G. Psacharopoulos' study, "Returns to Education", 1973.

[2] Basic data taken from the 1981 Report of the Department of Labor and Employment, Philippines.

problem is still considered a major community problem by both Tondo residents in spite of the improvements made. This can mean that the standard of living of Tondo residents in 1984 is higher than in 1974 and that better quality facilities are given concern. The categories "physical infrastructure," "physical environment," "social infrastructure" and "no land ownership" are significantly different — 1974 shows higher proportions than 1984. This suggests that there is a higher priority given to basic needs in 1974 than in 1984 and can be due to poor housing and community facilities before the project. This is supported by the findings on "high cost of living" and "social relationships and community disorder" categories which show significantly higher proportions in 1984 than in 1974.

4.5 Health

Table 6 shows that Manila and the Philippines have much lower mortality rates due to pneumonia than Tondo. While the death rate for the Philippines decreased in 1984, the death rate for Tondo increased in the same year. The findings show a mortality rate of 806.6 per 100,000 population for Tondo in 1984 and the ratio between Tondo and Metro Manila for the same year is 3.7:1. For 1974, the ratio between Tondo and Manila City is 2.8:1. Overall, there is an increase in mortality rates of Tondo within a 10-year period and could probably stem from an ineffectiveness of the health programs carried out by the project.

5. Summary, Conclusions and Recommendations

The above findings show that Tondo residents experienced some improvements in their socioeconomic situation — increases in income, school enrolment, proportions of schooling members who go to high school after elementary school, and a shift in perception of community problems from basic to less basic needs. These support the study's hypothesis that a development could bring about improvements in the living conditions of the residents. On the other hand, a worsening of condition with respect to health was observed. Though this could be a pattern brought about by the economic crisis that gripped the country in the early 1980s, this finding does not support the study's postulate regarding improvement of health conditions of residents owing to a development project.

Overall, an evaluation of housing development projects in the light of their socioeconomic impacts could be said to give a realistic

Table 6 — Mortality Rates Due to Pneumonia per 100,000 Population (Tondo, Manila/Metro Manila and Philippines, 1974-79)

Year	Tondo (N=53)	Manila/ Metro Manila	Philippines
1974	195.9	69.2[1]	110.7 (112.6)
1975	NA	57.4	103.3
1976	NA	137.0	109.1
1977	NA	152.7	106.5
1978	NA	124.3	99.9
1979	NA	126.8	104.2
1984	808.6	(219.2)	89.3

Notes: [1] Data for 1974 hold only for the City of Manila.
Figures in parenthesis are researcher's projection estimates.

NA – Not Available.

Sources: 1974 to 1979 data on Manila/Metro Manila and the Philippines were taken from NCSO, 1970-79 Report on Major Causes of Deaths.

1974 data on Tondo were taken from NHA/TFDA, Socioeconomic Survey Report: Tondo Foreshore Urban Renewal and Resettlement Project, 1974.

1984 data on the Philippines were taken from the International Nursing Foundation of Japan, *Nursing in the World,* 2nd Edition, 1985.

and comprehensive picture of the conditions of the areas involved. Socioeconomic impact studies of this type are recommended not only for the Philippines but also for other countries because they can better guide the countries' urban development scheme. In addition, this method could be applied to the evaluation of other types of urban development projects like transportation, social infrastructure and utilities projects for a better idea of how planning policies can be further improved.

References

Jimenez, E. (1983), "The Magnitude and Determinants of Home Improvement in Self-Help Housing: Manila's Tondo Project," *Land Economics*, 59:70-83.

Jimenez, E. (1981), "Philippine House Consolidation Estimating Changes in Housing Quality," *Philippine Journal of Public Administration*, 25:270-279.

Leaf, M. J. (1983), "The Green Revolution and Cultural Change in Punjab Village, 1965-1978," *Journal of Economic Development and Cultural Change*, 31:227-270.

Lindauer, D. L. (1981), "The Tondo Project: Whom Have We Served?" *Philippine Journal of Public Administration*, 25: 280-287.

Loanzon, V. V. (1978), "An Evaluation of Development Changes: the Case of Tondo Foreshore and Dagat-Dagatan Urban Development Project," Masters Thesis, University of the Philippines, Quezon City, Metro Manila, Philippines.

Maslow, A. (1970), *Motivation and Personality*, New York: Harper and Brothers.

Maynard, P. J. (1976), "Value Changes in Development Cluster of Villages in Laos," *Values and Development: Appraising Asian Experience*, Massachusetts: The MIT Press.

Munarriz, M. T. (1981), "Questionnaire Cum Formal Representation Approach of Participation to Urban Rehabilitation Planning and Policy-Making," Unpublished Second Year Essay, University of Tsukuba, Japan.

National Census and Statistics Office (1980), *Census of Population on Housing: Metro Manila*, Philippines.

National Economic and Development Authority (1980), *Guide to Project Development*, 3rd ed., Metro Manila, Philippines.

National Housing Authority (1974), "TFDA Socio-economic Survey Report: Tondo Foreshore Urban Renewal and Resettlement Project," Metro Manila, Philippines.

National Housing Authority (1982), "Summary Report on the Operations of NHA," Metro Manila, Philippines.

National Housing Authority (1983), *Housing the Urban Poor: The Tondo Experience*, Metro Manila, Philippines.

Psacharopoulos, G. (1973), *Returns to Education*, New York: Elsevier Scientific Publishing, Co.

Psacharopoulos, G. (1980), "Returns to Education: An Updated International Comparison," *World Bank Staff Working Paper No. 402.*

Reforma, M. (1981), "Preliminary Estimates of Project Turnover in the Tondo Foreshore Dagat-Dagatan Development Project," *Philippine Journal of Public Administration*, 25: 225-238.

Reforma, M. (1981a), "House Consolidation in Tondo: Estimating Changes in Housing Quality," *Philippine Journal of Public Administration*, 25:252-269.

Silas, J. (1976), "Tondo Foreshore," *Philippine Quarterly*, 8:59-62.

Silas, J. (1984), "The Kampung Improvement Programme of Jakarta and Surabaya," *Low Income Housing in the Developing World*," G. Payne, (ed.), Chichester: John Wiley and Sons.