

**Infrastructure Development and the Informal Sector  
in The Philippines**

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**Mrs. S. O. Yu**

**June 2002**

**Employment-Intensive Investment Branch  
International Labour Office, Geneva**

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## PREFACE

This paper examines the role of infrastructure development in improving productivity and working conditions in informal sector enterprises in the Philippines. It forms part of the ILO's urban poverty alleviation programme, which places infrastructure development and the improvement of productivity in the urban informal economy at the forefront of urban poverty reduction policies. This corresponds to the ILO's two-pronged strategy for urban poverty alleviation through, on the one hand, labour-intensive infrastructure development policies to achieve employment creation for the poor, and on the other hand, improved living and working conditions and productivity in the informal economy.

The ILO's mandate to address the informal economy was reaffirmed in the Director-General's Report to the 87<sup>th</sup> Session (1999) of the International Labour Conference, *Decent Work*. The Report put renewed emphasis on the informal sector especially in view of the continuing displacement of workers from both the public and private sectors as a result of economic restructuring in developing countries.

In the world today, over 60 per cent of urban employment and over 90 per cent of new jobs were created in the informal economy in the past decade or so (WIEGO 2000). And there are 300 million urban poor who are living in slums or informal settlements (Habitat). Though there is no figure available indicating how many informal workers/producers live in slums and informal settlements, it is believed that a great majority of them are living there as homes are always used as workplaces by the informal enterprises. The comprehensive ILO Report on *Decent Work and the Informal Economy*, submitted to the 90<sup>th</sup> Session of the International Labour Conference 2002, addresses *inter alia* the importance of infrastructure improvements in urban slums and low-income settlements and its impact on the informal economy.

This paper demonstrates the relationship between infrastructure development, productivity, and work conditions, as they occur on the ground. In this case, informal settlements in the Philippines provided a rich source of experience from which to draw observations and, to the extent possible, quantifiable conclusions. Low-income communities which have undergone physical improvements, as well as those which have not, were surveyed whereby their pre- and post-upgrading experiences were recorded, compared, and, where possible, computed.

The stories people told reveal how roads, water supply, drainage systems and electricity can make changes in their lives beyond the readily apparent and the immediately quantifiable. Not only do communities speak of increased incomes, more work hours, and reduced utility rates, as a result of the infrastructure; they also speak of being nearer their families since they could now work at home, having more rest time, feeling more secured, and gaining the respect of their neighbors.

This study fills an apparent gap in the literature on the informal sector. For apart from understanding the nature, magnitude and origins of the informal sector, most studies have focused on support systems, such as business services, social insurance and work conditions improvement, which tried to mitigate the effects of poor initial conditions in which informal

sector enterprises operate. The role of infrastructure in creating an enabling environment that can correct some of these initial conditions is obscured, perhaps assumed too readily.

In this study, this enabling role is demonstrated by showing how appropriate infrastructure creates the conditions in which growth can take place more spontaneously : growth which is suppressed in their absence, growth which direct strategies try to induce in the absence of these enabling factors.

The manner by which community upgrading is carried out, namely, that they are labour-intensive and community-driven, is likewise emphasized as it determines the extent to which the created facilities are appropriate, affordable, and sustainable, thus leading to more permanent infrastructure and more lasting impacts.

I would like to thank the author - Ms. Sandra O. Yu for her valuable study which, we are sure, will contribute to further refine the policies and operational strategies aimed at upgrading the difficult working and living conditions that prevail in the informal economy.

Geneva, June 2002

Jean Majeres,  
Head,  
Employment-Intensive Investment Branch.

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The author is grateful to the Foundation for the Development of the Urban Poor (FDUP) and the Vincentian Missionaries Social Development Foundation, Inc. (VMSDFI), which linked the author to the surveyed communities and lent their time to the researchers. Most of all, this study would not have been possible without the support of the individual respondents who entrusted their data, their stories, and their time, to the author.

Sandra O. Yu

# INFRASTRUCTURE DEVELOPMENT AND THE INFORMAL SECTOR

By Sandra O. Yu<sup>1</sup>

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## List of Abbreviations

DAEP	-	Depressed Area Electrification Program
FDUP	-	Foundation for the Development of the Urban Poor
MERALCO	-	Manila Electric Company
MWSS	-	Metro Manila Water and Sewerage System
NAWASA	-	National Waterworks and Sewerage Authority
OECF	-	Overseas Economic Cooperation Fund
PBSP	-	Philippine Business for Social Progress
SEPVHOA	-	Southeast People's Village Homeowners Association (Tagig, Rizal)
SMC	-	Samahan ng Magkakapitbahay ng Cupang (Antipolo City)
TINHA	-	Tabing Ilog Nangka Homeowners Association (Marikina City)
VMSDFI	-	Vincentian Missionaries Social Development Foundation

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## 1. Introduction

In recent decades, the role of the informal sector in economic development and poverty alleviation has been extensively researched. The literature on informal sector support is rich in the analysis of support systems – be they in statistical coverage, appropriate regulations, business services, social insurance or microfinance. Yet, one aspect which may have been assumed away but which could be critical to the growth and upliftment of the sector had not been adequately addressed. This is the aspect of infrastructure development.

Infrastructure consists of social and economic infrastructure. The former covers education and health services while the latter, which is the main focus of this study, involves the the following:

- public utilities (e.g. power, telecommunications, piped water supply, sanitation and sewerage, solid waste collection and disposal, and piped gas)
- public works (e.g. roads and dam and canal works)
- transport (e.g. urban and interurban railways, urban transport, ports and waterways, and airports). (Muteta, et.al.)

While infrastructure development has been covered in the literature (Kesides, 1997; Menendez, 1991; Dejardin, 1996), discussions have focused mainly on the role of public works programmes in generating employment among the poor. Less scrutinized is the question of whether infrastructure development leads to business growth, especially informal sector or micro enterprise growth.

This paper seeks to illustrate the links between infrastructure development and improved productivity and work conditions in informal or microenterprise enterprises. It surveys communities in which infrastructure development has taken place and analyzes, through qualitative and quantitative data, how upgrading has affected business performance in terms of higher productivity, improved work conditions, better markets, and access to productive inputs.

In the process, the paper will identify constraints and bottlenecks which have hindered the realization of the synergy between infrastructure development and productivity improvement and will cull lessons from these experiences.

By studying the communities in which upgrading has taken place, this paper will further assess the overall impact on enterprises, the affordability, reach and sustainability of the projects, and their effectiveness based on beneficiary satisfaction ratings.

The next section (Section 2) discusses the state of infrastructure provision in low-income settlements in the Philippines. Section 3 and 4 explain the conceptual framework and the methodology of the study. Section 5 presents the main findings of the study based on quantitative and qualitative data and, finally, Section 6 concludes the paper.

## 2. State of Infrastructure Provision in Low-Income Settlements

As backdrop to the main study, it would do well to show the state of infrastructure provision in low-income settlements in the Philippines as a whole.

### 2.1. Characteristics of informal settlements

As of October 2000, there were over 1.2 million families living in informal settlements in key urban centers.<sup>2</sup> This represents close to 30 percent of the urban population who reside in slum or squatter communities. The urban poverty incidence of 21.5 percent suggests that not everyone who lives in slum communities is poor. Formal shelter and land are still beyond the reach of many people, including those who are considered non-poor.

Many informal settlers are located in government-owned land (34 percent) or in government infrastructure project sites (21 percent). The rest are found in private lands (24 percent) and danger areas (21 percent).

It was estimated that from 1990-1995, the growth of informal settlements averaged 18 percent<sup>3</sup> or roughly 3.6 percent annually. The National Capital Region accounted for 57 percent of informal settlements in the country.

In a survey of 1,826 of informal settlers in Quezon City<sup>4</sup>, it was found that only 17 percent of residents had proper and legal rights over the land they occupied. At least 60 percent had occupied their lands illegally, having purchased informal rights (nearly 50 percent) or having no permission at all (10 percent).

Urban poor settlers often suffer from low educational and employment skills, very low and irregular incomes, poor health conditions, and very unstable jobs. They are often found to engage in some marginal economic activities to sustain their families. They live under constant threat of eviction and they lack access to urban services and infrastructure (Urban Research Consortium, 1997).

### 2.2. Availability of infrastructure

The following section presents the state of infrastructure in low-income communities and reviews some initiatives that have been taken by some public and private sector groups, including community residents, in facilitating infrastructure provision.

#### 2.2.1. Basic utilities

**Electricity.** Many dwellings in informal settlements have access to electricity although not necessarily through formal channels. In many cases, illegal connections and wire-tapping are practiced because residents cannot afford the costs of power installation. Land ownership problems also prevent utility companies from constructing fixed installations in informal settlements. In the survey conducted among informal settlers in Quezon City, it was found that while all of the respondents had power connection, only 60 percent were formally connected with the Manila Electric Company (MERALCO).

Government and public utility providers have attempted to expand power connections to informal settlers. One of these initiatives was the Depressed Areas Electrification Program (DAEP), which was jointly undertaken by MERALCO, a commercial provider, and the Philippine government in 1990.

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<sup>2</sup> National Housing Authority.

<sup>3</sup> Urban Infrastructure Finance.

<sup>4</sup> Urban Research Consortium (1997).

Under this programme, power connection was expanded to low-income settlements at an affordable cost through a multi-metering design. All individual electric meters are located at a common station within the community, usually at the community center or the main access road.

At the same time that it brought down the cost of installation, DAEP also put in place an incremental payment system whereby the total cost of P3,000 per household was paid in monthly installments. Under this payment system, each household would pay P1,000 upon power installation and the balance of P2,000 would be paid in monthly installments of P30 over five years.

Funded by the Overseas Economic Cooperation Fund (OECF), DAEP was able to expand MERALCO's electric distribution services by 1999 to more than 317,000 informal settler households in Metro Manila. In sample areas served by the DAEP, formal connection with MERALCO rose from an average of 76 percent to 95 percent of total households. (See Table 1.)

The program was also reported to have created 300 jobs during its implementation phase. It was furthermore reported that one in every three households was able to set up a small business as a result of formal electric connection.

Other benefits of the DAEP were also observed. Children in DAEP settlements were able to extend their study hours into the night due to improved lighting. Also, because of better street lighting during the evenings, peace and order in the DAEP settlements improved as the incidence of violence and crime dropped.

**Table 1: Impact of DAEP on Eight Target Areas**

	Electrification level (%)	Electrified dwelling units (%)		
		MERALCO customer	Thru colorum operators	Illegal connection
Average prior to DAEP	75.60	32.34	45.75	21.87
Mataas na Lupa	100.00	7.00	63.00	30.00
Bgy. A. Samson	70.00	3.88	31.02	65.10
Pena Road, Bahay Toro	25.00	0.00	100.00	0.00
Sinagtala, Bahay Toro	100.00	12.66	83.12	4.22
DMA	93.00	8.93	82.14	8.93
Libis Espina	100.00	84.25	2.17	13.58
Maricaban	27.00	97.09	0.00	2.91
Tondo Foreshore	90.00	44.93	4.83	50.24
Average after DAEP	95.00	95.00	0.00	5.00

Source: MERALCO

**Water.** Compared to other types of infrastructure, water is perhaps the most problematic for informal settlers. In the Quezon City survey, it was found that more than 56 percent of the respondents purchased water from private sources, while another 24 percent of the respondents made do with public faucets and water wells.

A survey of 500 households in Metro Manila in 1995<sup>5</sup> found that residents acquired their water through water vendors (23 percent), private waterworks (5 percent), individual tubewell (2 percent),

<sup>5</sup> David (1998).

public faucets (1 percent), or through a combination of these water sources (12 percent).<sup>6</sup> Only 57 percent were formally connected with then Metro Manila Water and Sewerage System (MWSS).<sup>7</sup> Even then these resident had to suffer from low water pressures and intermittent water supply (only 16 hours per day).

Households who relied on vendors for their water needs paid ten times the rates of MWSS. Tables 2 and 3 show the cost of accessing water according to source and according to income class, respectively. These tables indicate that those who pay the most for water access are those who are in low-income settlements (viz. those who purchase from vendors and from public faucets [Table 2] and those from the lowest income classes [Table 3]).

Additional cost is likewise borne by households in procuring water from external sources as they still need to transport water to their homes. Time is also reduced for household and productive activities.

Various initiatives have been taken by the government to expand water services in informal settlements. The MWSS, for example, installed public standpipes in depressed areas. Since the privatization of the MWSS in 1996, private water concessionaires are obliged to provide public standpipes in depressed areas (regardless of the tenurial status of the community) at a ratio one standpipe per 475 persons. The Department of Public Works and Highways had installed shallow and deep wells for community use. Politicians often helped finance water well installations.

Still, too few of such standpipes and water wells had been installed which also meant that their outreach had been minimal as well. In the case of the MWSS, their standpipes were grossly mismanaged leading to revenue losses and high operating costs (David, 1998). As for the water wells, ground water supply rapidly diminishes leading to ground subsidence.

***Sewerage and Sanitation.*** In general, low incomes, poor water supply, and absence of infrastructure in informal settlements translate into poor sanitation as well.

In Metro Manila, only 6 percent of residents benefit from MWSS's sewerage system. Informal settlements located near creeks and rivers use the waterways to dispose their human and household wastes. In areas located far from waterways, residents install rudimentary latrines (e.g. pit latrines) where buried waste can seep into the soil and eventually contaminate ground water.

***Solid waste management.*** Solid waste management and garbage disposal likewise suffer especially where access roads are absent. Only 19 percent of urban poor households are serviced by government garbage collectors.<sup>8</sup> The rest resort to burning or public dumping of solid wastes and garbage in public areas, which can also lead to diseases and flooding.

### **2.2.2. Public works**

***Roads and footpaths.*** Because informal settlements are unplanned settlements, paved roads or footpaths are often absent. In most informal settlements, pathways are narrow and earthen. During rainy season, such pathways are easily eroded, making mobility within the informal settlements highly risky and inconvenient. (Moreover, because of the lack of sewerage system, wastewater and other wastes could be found along footpaths.) In areas near waterways and coastlines, makeshift wooden planks are used as temporary footpaths.

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<sup>6</sup> Private waterworks refer to deep wells operated by motorized pump and connected to the household's indoor plumbing. Tubewells, meanwhile, are singular and manual water pumps.

<sup>7</sup> The MWSS was privatized in 1996.

<sup>8</sup> David (1998).

Some informal settlements have received government funding for the construction of more permanent and sturdy roads. In the absence of such support, residents have taken it upon themselves to construct footpaths. Footpaths are either cemented, asphalt, or gravel-paved.

### 2.2.3. Urban transport

In the same survey of informal settler households in Quezon City, it was found that transportation cost accounted for 17 percent of total household expenses (second only to food which accounted for 56 percent of total expenses) This proportion is three times the national average (Urban Research Consortium, 1997).

Furthermore, urban poor commuters experience longer transport time than middle- and high-income earners. This is because of the lack of transport facilities in the urban areas (especially within informal settlements) and the relatively distant locations of some settlements. They also spend more time walking, transferring from one transport terminal to another (Urban Research Consortium, 1997).

Thus, on many counts, low-income settlements suffer from a lack of basic utilities and infrastructure in their communities and, where they are found to have some access, the costs that they have to bear far surpass those incurred through formal channels. Because many economic activities take place in these low-income settlements, including informal sector activities and microenterprises, these productive activities are assumed to be affected as well.

**Table 2: Average cost of water and distribution of households by source of water, Metro Manila: 1995**

Source	% of household	Average cost (Peso/cu. m.)	Monthly income (Peso/ capita)	% of water bill to income
MWSS				
Without sewer	51	5.5	2,887	2.0
With sewer	6	8.5	5,648	1.5
Private waterworks	5	7.9	7,249	1.9
Individual tubewell	2	n.a.	5,031	n.a.
Public faucets	1	22-44	n.a.	n.a.
Water vendors	23			
MWSS water	19			
Pick-up		30.4	1,168	4.2
Hose (container)		48.3	1,223	6.2
Hose (fixed charge)		21.8	1,325	2.7
Delivered		71.9	1,359	11.9
Ground water	4			
Pick-up		40.2	854	5.7
Hose (container)		44.0	2,500	4.8
Hose (fixed charge)		58.9	2,245	3.8
Delivered		62.3	1,850	4.3
Combination	12			

Source: David (1998).

**Table 3: Average cost of water by income class in Metro Manila, 1995**

<b>Income class</b>	<b>Average cost (Peso/ cu. m.)</b>	<b>% of water bill to income</b>
Under P30,000	36.4	8.2
P30,000 – 39,999	15.9	4.4
P40,000 – 59,999	15.9	4.2
P60,000 – 99,999	15.9	2.9
P100,000 – 149,999	13.9	2.2
P150,000 – 199,999	9.2	1.6
P200,000 – 249,999	5.9	1.4
P250,000 – 499,999	8.0	0.8
P500,000 – 749,999	6.0	0.8
P750,000 – 999,999	9.3	0.8
P1,000,000 and over	7.1	0.6

Source: David (1998).

### 3. Conceptual Framework

#### 3.1. Impact of infrastructure: A review of literature

It is believed that the absence of basic infrastructure in urban poor settlements impedes the growth of informal sector enterprises. Poor conditions in informal settlements, characterized by the absence of “safe water, sanitation, solid waste collection and disposal, storm drainage, public transport, access roads and footpaths, street lighting, public telephones, and often other neighborhood amenities (e.g. safe play areas, community facilities), electric connection, and social services, ... (translate) into squalid and unhealthful living conditions and reduces residents’ productivity and employment options” (Kessides, 1997).

It has also been emphasized that lack of access to basic infrastructure services, particularly water, increases the time spent by the poor in procuring such resources—time which could have been spent on more productive and income-earning activities. Likewise, it forces people to settle for what is locally available even if the quality of the resource, water, for example, is low or unsafe (Edmonds, 1998). This has obvious consequences on people’s health and human capital.

Thus, infrastructure development is expected to bring about substantial benefits in terms of higher productivity and improved human capital within informal sector enterprises. This link was illustrated in the study of Muteta, *et.al.* (1998) in Dar es Salaam, Tanzania, where they showed the following sample relationships:

- Provision of storm water drainage reduced the risk of diseases such as malaria, thereby reducing health risks and improving human capital.
- Road upgrading and the provision of drainage made movements in, out and within the area easier, safer and more comfortable. Enterprises which benefited most from the road improvement were those which relied heavily on the transport of their supplies and products in and out of the area.
- Road upgrading made business more accessible, visible and attractive to clients. Unintentionally, the road project increased business competition in the area since firms in the upgraded areas not only had to compete with one another; they also had to compete with those firms located in the adjoining non-upgraded areas which experienced greater exposure to old and new clients.
- Overall, self-esteem, pride and welfare were bolstered among informal entrepreneurs.

Based on their observations, Muteta, *et.al.* (1998) concluded that the impact of infrastructure on informal sector enterprises is not always direct, intended, and positive. Likewise, the benefits of infrastructure development cannot be measured always in economic terms. Sometimes, the effects are more social, which in the long run upgrade human capital.

Infrastructure improvement improves the mobility of the residents to resources and inputs (through better transport systems; e.g. roads and footpaths) as well as increasing the proximity between supplier and user (by bringing the supply of resource; e.g. water, closer to the people). Both mobility and proximity reduce the time spent on procuring resources and thus allows greater allocation of time to productive activities and rest.

Interestingly, the observation was made that mobility is more vital for economic activities of informal enterprises especially those which exhibit high levels of motivation for growth and expansion. Enterprises are better able to expand their network of suppliers and buyers with improved roads and transport systems.

On the other hand, proximity of basic infrastructure services impacts more on the overall domestic and social needs of the households and enterprises. Bringing water or health care supply, for example, closer to households means community residents do not need to travel far and waste valuable time in procuring services elsewhere. Proximity performs a dual function and makes a bigger impact on

poverty alleviation (Edmonds, 1998). Women are especially favoured by interventions which improve proximity (Edmonds, 1998). First, improved proximity allows women to secure the “survival and maintenance” of the household and, secondly, it allows them more time to undertake economic activities to augment household income.

### 3.2. Intervening factors

Muteta, et.al. (1998) concluded that, whatever its effects, the importance of infrastructure to an enterprise varies according to the:

- size of the enterprise
- technology employed by the enterprise, and
- type of activity and clients the enterprise has.

Because of these intervening variables, it was argued that access to infrastructure does not readily translate into enterprise growth.

It was argued that medium-sized enterprises are most adversely affected by lack of access to infrastructure, while small and large enterprises are minimally affected by the lack of infrastructure. The reason is that small enterprises have learned to adapt to infrastructure-deficient conditions by employing technologies that do not rely heavily on infrastructure by using indigenous materials and by serving local clients. As for larger enterprises, they have the necessary funding and logistical capabilities to substitute for infrastructure deficiencies.

It was observed that medium-sized firms were “evolving” enterprises (i.e. those whose production and clients are expanding) that were gradually becoming infrastructure-intensive (e.g. relying heavily on electricity to run machinery). The absence of infrastructure would stifle the growth of such “evolving” enterprises; infrastructure provision on the other hand would promote their growth and integration into the formal economy.<sup>9</sup>

Access to infrastructure therefore produces varied results depending on the characteristics of the enterprises and the type of infrastructure provided. Based on the above discussion, Table 4 summarizes selected types of economic infrastructure and outlines their possible impact on enterprises.

**Table 4: Relationship between Economic Infrastructure and Productivity/Working Conditions**

Economic infrastructure	Immediate results	Enterprise Results
Road upgrading	Access to inputs / markets Attractiveness to clients	Higher sales / Greater comfort Higher sales / More businesses
Power	Use of equipment and tools	Higher productivity
Telecommunications	Access to inputs & markets	Higher sales / Lower cost
Water supply	Time for productive work	Higher productivity / More rest
Sanitation and sewerage	Health conditions of workers	Higher productivity / Better human capital

<sup>9</sup> These conclusions are shared by studies which focused on the impact of information and communication technologies (e.g. telephones, faxes, computers, e-mail). on small enterprises. In their study of small enterprises in Botswana (Africa), Duncombe and Heeks (2001) concluded that firms which rely on informal networks and public media for information needs benefit less from information and communication technology. In contrast, firms with “evolving” marketing and management needs have a greater need for wider information and communication, and thus benefit most from the provision of such technologies and infrastructure.

### 3.3. Expected impact

From the outset, it was stated that this paper seeks to establish the link between infrastructure development and productivity and work conditions.

Productivity improvement involves developing the capacity of an enterprise to mobilize and utilize resources, including labour and capital, in order to increase output of tradable goods and services (Lisk, 1996). It implies the:

- **achievement of higher levels of production** given available inputs or resources, and/or
- **reduction of unnecessary costs** to produce a given volume of goods at a defined quality over a given period of time (adapted from Allal, 1995).

However, productivity addresses supply conditions, and has to be balanced with demand or market circumstances. It is the latter which determines sales and prices, or how goods produced with some level of productivity find their way to the hands of the target users. Productivity cannot be equated with profitability. A producer who has a high level of productivity cannot be profitable if demand for her goods is low in volume or if prices are low due to intense competition in her neighbourhood.

Therefore in discussing business growth and development, one has to look at both sides of the equation; namely, the supply conditions and the demand (or market) conditions. The task on hand is to show how infrastructure improvement may lead to:

- higher levels of production
- reduction of costs
- increased sales

The end outcomes of the above objectives are the attainment of:

- better incomes
- more economic opportunities, and
- enhanced human capital through better health, which in turn redounds to better productivity

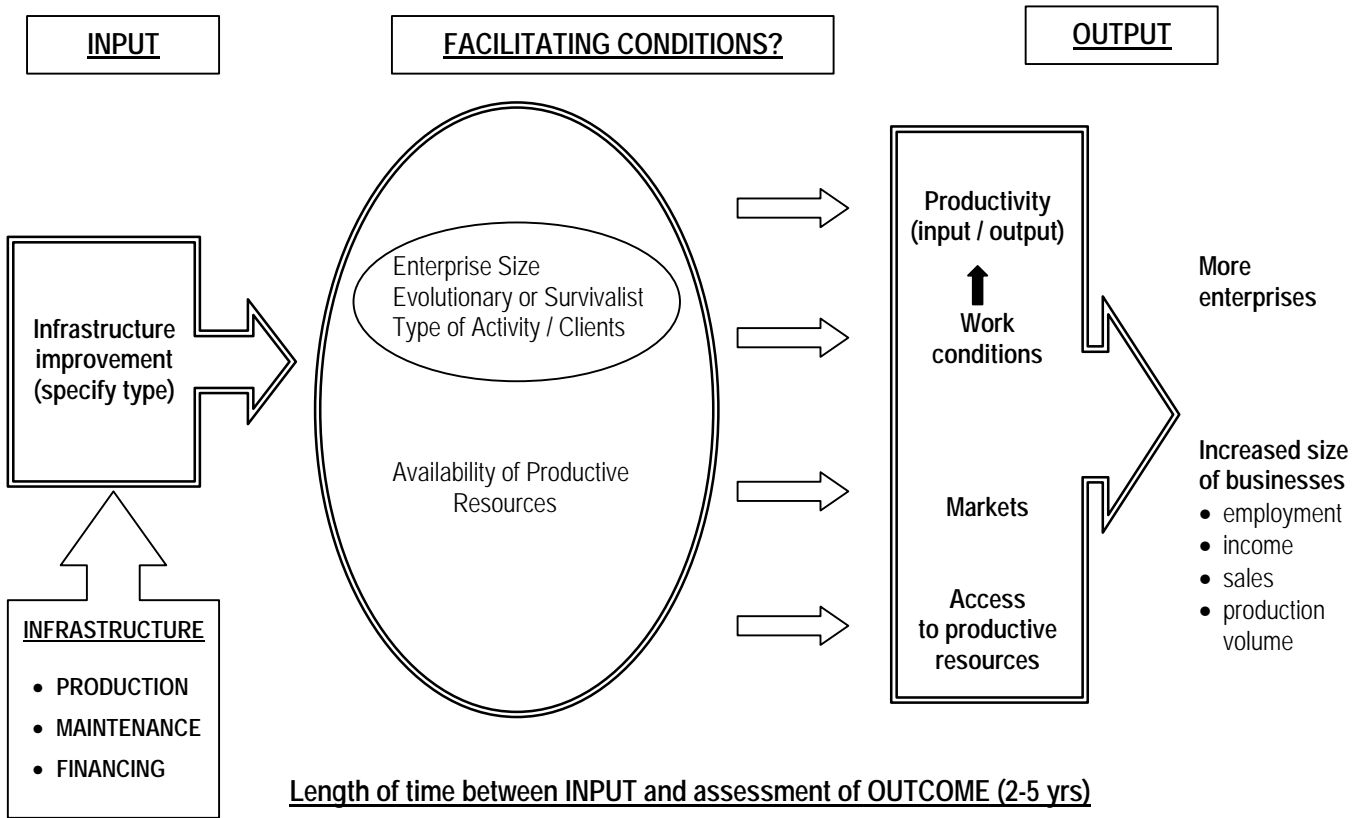
It will also be observed whether the benefits brought about by infrastructure improvement varied according to certain factors, such as the

- size of the enterprise
- technology used
- kinds of activities, and
- types of clients of the enterprises.

In the course of the assessment, this paper will examine the manner by which infrastructure was provided. Of interest is the way in which community upgrading was initiated, provided, maintained and financed. Key issues that will be taken into account include appropriateness, affordability, and the sustainability of the infrastructure provided vis-à-vis the target groups. Also of interest would be the specific roles of the public and private sectors in the entire process.

See Box 1 for a graphical illustration of these expected relationships.

**Figure 1**  
**Conceptual Framework**



## 4. Background of the Study

### 4.1. Methodology

The study covered a total of 53 respondents, 25 of whom had undergone community upgrading and 28 had not. These represent a total of three (3) upgraded communities and two (2) non-upgraded communities.

The survey period spanned one month within July and August 2001. The upgraded communities were found in two cities and one municipality; namely, Antipolo City, Marikina City, and Taguig, Rizal. They were selected through the assistance of a local non-government organization<sup>10</sup> which assists low income communities in purchasing their land. These communities were selected on the basis of the following:

- they had undergone several types of infrastructure improvements within the last 2-5 years (mainly power connection, road improvement, and water provision)
- community participation was involved in the upgrading activities
- residents are predominantly low-income.

It was initially hoped that some baseline information existed on the three communities prior to the upgrading activities. However, the NGO did not have complete records to show such pre-improvement conditions.

The non-upgraded communities came from two cities; Antipolo City and Quezon City. The choice of the non-upgraded communities had to strike a balance between:

- having a similar profile as the upgraded communities but at the same time
- physically removed from the upgraded communities so that they were not influenced by the infrastructure improvements. The community in Antipolo City was next to the upgraded area but the researchers made sure that none of the improvements in the adjacent community (roads and water supply) were available to them.

In the absence of baseline information, it was difficult to determine that the pre-improvement condition in the upgraded communities were similar to the current conditions in the non-upgraded communities. This was important to establish comparability between the two sets of respondents. Community leaders however estimated that the average income in all covered communities was P5,000 per month, and their proximity to main commercial centers was comparable.<sup>11</sup>

Community leaders were asked to provide respondents that fit the following criteria:

- a. Have at least one business in the selected community whether it is conducted at home or has own premises
- b. Have some business activities taking place in the premises even as some other processes are conducted outside (e.g. production inside but marketing outside)
- c. Ongoing business began (whether same main line of business or not) before infrastructure improvement
- d. Represent a cross section of the following:
  - Size of firm or economic activity (0; 1-5; 6-10 workers)<sup>12</sup>
  - Sector (trading, manufacturing, services, food, construction, transport)

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<sup>10</sup> Foundation for the Development of the Urban Poor

<sup>11</sup> See Table 5 which shows the basic profile of the communities, including the zonal value. Zonal values are used for taxation purposes and they reflect the state of development of the municipality and the proximity of the area in question with main thoroughfares and major commercial centers.

<sup>12</sup> The informal activity may be (a) an enterprise activity having different functions, including production, marketing, and finance or (b) an activity having only one function such as marketing or production. The latter is otherwise known as industrial homework where the market and source of input is often a single principal.

- Male and female owners/managers

The community leaders were asked as much as possible to make random selections all throughout the community (e.g. consider possible respondents every block or every five houses).

#### 4.2. Surveyed communities

The communities are described briefly in this section. Details are found in Annex 1. Improvements in the three upgraded communities had to do mainly with power connection, road construction, and water supply provision.

The community in Parang, Marikina City, had been in the community since 1994. It is made up of 198 households many of whom have a member working in the adjacent tobacco factory. It was estimated that around 32 percent of the working residents are self-employed or have subcontracting work with nearby shoe factories. The improvements experienced in the community are:

- Power connection which was installed in 1996 under the DAEP. Until then, the community simply went without electricity.
- Access road which was cemented by the municipal government in 1999 after much lobbying by the community residents.
- Water supply network which was completed in 1996 entirely through community effort. This involved construction of a community well, purchase of water pumps and tanks, and distribution of long hoses all throughout the community – all costing some P150,000. Prior to the improvement, residents would get water from a spring by the riverbank.
- Solid waste disposal which is done through regular garbage collection by the municipal government. Collection began after the access road was cemented.

The community in Cupang, Antipolo City, has a total of 4,000 households, 30 percent of which are estimated to be self-employed or are running a small business. The improvements in Cupang are as follows:

- Formal power connection which was installed in 1995 under DAEP. Prior to this, community residents would tap into their neighbour's lines and would pay a fee ranging from P50-100 per appliance unit.
- Access road which was cemented in May 2000 after the community successfully persuaded the government to declare the road a barangay<sup>13</sup> road. It was cemented after the community donated the land to the barangay and thereafter considered public road.
- Water supply which was completed in October 2000. The construction of the water system was spearheaded by the community and was supported by government, through a grant of a submergible pump, and a non-government organization, which assisted in the construction of the well. Distribution is done through individual piped-in connection to households. Prior to this, water had to be purchased at P25 per barrel compared to the present cost of P2 per barrel.
- Solid waste disposal which is done through regular collection by the local government after the access road was cemented.

The community in Tipas, Tagig, has 234 households, 30 percent of which were estimated to be self-employed. Improvements undertaken were as follows:

- Formal power connection, which was completed in 1998 under DAEP. Previously, residents would tap into their neighbour's lines and would pay a fee ranging from P100-300 per appliance unit.

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<sup>13</sup> Barangay is the smallest political unit. It normally encompasses 5,000 individuals in urban centers (and 2,000 individuals in rural areas).

- Access road, which was landfilled between 1995-98, as the community was built on a rice paddy. Prior to the landfilling, the community would have to put up wooden planks during rainy days. In due time, the community hopes to mobilize enough resources to cement the roads.
- Water supply system which was completed in October 2000. This involved the extension of the main water pipes of the national water system, the MWSS, into the community. Distribution is through individual piped-in connection to households. Previously, the residents obtained water from a community faucet.

Table 5 summarizes the basic profile and infrastructure improvements in the upgraded communities.

The non-upgraded communities selected for the study did not have access roads, proper footpaths, and reliable water supply. Both had electricity connection, however, which they had obtained under DAEP. Both upgraded and non-upgraded communities are located relatively near the city center.

**Table 5: Profile of Upgraded Communities in Marikina City, Antipolo City & Tagig, Rizal**

	<b>Tabing Ilog Parang, Marikina</b>		<b>SMC Cupang, Antipolo</b>		<b>SEPVHOA Tipas, Tagig</b>	
			<b>Total</b>	<b>Take-out*</b>		
<b>Land Area (in hectares)</b>	1.27		5	2	1.7	
<b>Total Number of Households</b>	198		4,000	169	234	
<b>Density (sqm per HH)</b>	64		12.5	119.76	73	
<b>Self-Employed (%)</b>	32		30		30	
<b>Average Income**</b>	P5,000		P5,000		P5,000	
<b>Electricity, Year Completed</b>						
	1996		1995		1998	
	<b>Previous monthly cost per appliance unit</b>	None	P50-100		P100-300	
<b>Roads,</b>	<b>Year Completed</b>	1999	May 2000		1995-98	
	<b>Source of Finance</b>	Local government	Local government		Local association	
<b>Water,</b>	<b>Year Completed</b>	1996	Nov 2000		Oct 2000	
	<b>Method of connection</b>	Community well w/ hose distributed in community	Community well, w/ piped-in connection		MWSS, w/ piped-in connection	
	<b>Project Cost</b>	P150,000	P2.2 million		P200,000	
	<b>Source of Finance</b>	Local association	Local government / Non-government org / Local association		Non-government org / Local association	
	<b>Present Cost/Barrel***</b>	P12.00	P2.00		P1.20	
	<b>Previous Cost/Barrel</b>	None	P25.00		P5.00	
	<b>Users (in #HH)</b>	198	180		110	
	<b>Average usage / HH</b>	3 containers/day	3 barrels / day		2 barrels / day	
	<b>Monthly revenue</b>	P25,000	P35,000		P13,000	
	<b>Monthly net income</b>	P6,000	P21,000		- P1,000	
	<b>Solid Waste Disposal</b>	Collected by local govt after road construction; twice a week	Collected by local govt after road construction, once a week		Dumped in creek & roadside reached by garbage truck	
<b>Zonal Value</b>						
	1989:	P800	1998:	P850	1996:	P300
	2001:	P2600	2001:	P1500	2001:	P800-1200

\* "Take-out" refers to the portion which has been purchased and subdivided by the community.

\*\* Average incomes indicated were estimates given by community leaders.

\*\*\* For comparison, one of the major utility companies charges P7.85 per cubic meter (as of December 2000) which is equivalent to P2-3 per barrel assuming that one cubic meter is equivalent to 3-4 barrels.

## 5. Study Findings

This section presents the results of the survey. It will present mainly the:

- basic and household profile of respondents in the upgraded and non-upgraded communities
- business profile of both groups
- availability of infrastructure in their communities

It is hoped that the impact of the infrastructure improvements can be gleaned from:

- key differences between the upgraded and non-upgraded communities; especially on their degree of satisfaction, problems cited, business growth
- changes within the respondents' businesses resulting from the infrastructure improvements.

Furthermore, it is from the findings, particularly on the basic profiles of the populations, that one can glean the comparability of the two groups. Pertinent data for this purpose would include education levels, age, gender, start-up capital, among others.

### 5.1. Profile of the respondents

#### 5.1.1. Basic profile

**Age.** The average age of the respondents is 46 years. The non-upgraded communities have an older profile than the upgraded ones, the former having an average age of 51 years and the latter, 41 years.

**Gender.** Females make up 73.6 percent of the sample, with them being more predominant in the non-upgraded communities (93 percent) than in the upgraded communities (52 percent).

**Position in Family.** Household heads make up 60 percent of all respondents while spouses make up 34 percent. In the upgraded communities, household heads account for nearly 50 percent while, in the non-upgraded communities, 71 percent.

**Education.** The upgraded communities are more highly educated with 28 percent having had college or technical education compared to only 7 percent in the non-upgraded communities. Moreover, a greater number in the non-upgraded areas reached only elementary education (54 percent compared to 24 percent in upgraded areas) while the biggest proportion within the upgraded areas (48 percent) reached high school level.

**Main income source.** The main sources of income for both groups is the entrepreneurial activity, as 93 percent in the non-upgraded communities and 76 percent in the upgraded communities relied on the entrepreneurial activity as the main source of household income. Entrepreneurial activities accounted for an average of 82 percent of total household income in the upgraded communities and 72 percent in the non-upgraded communities.

**Monthly household income.** Monthly household incomes for both groups are comparable at P11,932 for the upgraded communities and P9,741 for the non-upgraded communities. However, there were more poor in the non-upgraded areas (39 percent earned less than P5,000) compared to those in the upgraded communities (12 percent earned less than P5,000).<sup>14</sup> (See Table 6.) On the average, however, the respondents were above the poverty line. It may be observed that the income from their entrepreneurial activity has lifted them out of poverty.

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<sup>14</sup> The poverty threshold for Metro Manila as of 2001 is in Metro Manila is P6,605 per month.

**Table 6: How much is your average monthly household income?**

	<b>Total</b>	<b>Upgraded</b>	<b>Non-upgraded</b>
Base – Total Respondents	53 100.0	25 100.0	28 100.0
P2000 or less	9.4	8.0	10.7
P2,001 to P5,000	17.0	4.0	28.6
P5,001 to P10,000	39.6	36.0	42.9
P10,001 to P20,000	24.5	44.0	7.1
P20,001 to P50,000	7.5	8.0	7.1
P50,001 to P100,000	1.9	0.0	3.6
Average	10407.3	11932.0	9045.9

**Number of businesses.** Both groups have an average of 1.5 enterprise activities. For both groups, 56-60 percent have one business and 32 percent have two businesses. Around 8 percent have three businesses.

**Number of years in community.** Both groups are long-standing residents of their communities as those in the upgraded areas have an average length of stay of 10 years and the non-upgraded areas 13 years.

**Land ownership.** While 60 percent in the upgraded areas are now amortizing their land, all of them had been staying on their land based on informal “rights” up until the late 1990s (1996 for Cupang and 1999 for Tagig). Only 14 percent in the non-upgraded areas have legal rights over the land they are staying. The rest are staying on the basis of informal “rights” or are squatting for free (with or without permission from the landowners).

**Previous employment.** More of the upgraded communities previously had wage employment. Around 72 percent of respondents in the upgraded communities had wage employment prior to setting up businesses compared to 40 percent in the non-upgraded communities. In both cases, only 12-14 percent had no employment at all prior to setting up the current business.

Comparing the respondents in the upgraded and non-upgraded communities therefore, significant differences could be discerned in the following:

- Gender, since the non-upgraded communities had more women respondents
- Age, as those in the non-upgraded areas were slightly older
- Education, since those in the non-upgraded areas had relatively lower education
- Previous employment, since the upgraded communities had more wage earners as their previous employment.
- Land tenure, as more of those in the upgraded communities are now amortizing their land.

Despite this, both groups earned almost the same amount of income, with the non-upgraded communities earning a little less than the upgraded communities. Still, the assessment of business performance between these two groups must take cognizance of the apparent differences in the profiles of the two populations. Other data, such as satisfaction levels and problems related to infrastructure, should not be affected by these initial conditions or basic profiles.

### 5.1.2. Business profile

**Nature of business.** It may be observed that the businesses in the upgraded communities required more skills than those in the non-upgraded communities. For instance, more respondents in the upgraded communities were engaged in food preparation (22 percent vs. 12 percent in non-upgraded areas) and more respondents in the non-upgraded communities were engaged in retail merely through sari-sari stores (38 percent vs. 20 percent in upgraded areas). Moreover, 17 percent in the upgraded communities engaged in repair and personal services while none was reported from the non-upgraded groups.

The rest in the non-upgraded communities were into livestock<sup>15</sup> (19 percent) and recycling (10 percent), both of which do not require high level of skills.<sup>16</sup>

In both groups, the proportion engaged in manufacturing were comparable at 22 percent for the upgraded communities and 17 percent for the non-upgraded communities.

Transport (mostly tricycles) accounted for 14 percent in the upgraded communities and 2 percent in the non-upgraded communities. (See Table 7.)

**Table 7: What type of business activity are you engaged in? (multiple answers)**

	Total	Upgraded	Non-Upgraded
Agriculture	2.6	5.6	0.0
Livestock	12.8	5.6	19.0
Manufacture	19.2	22.2	16.7
Retail, Sari-sari store	29.5	19.4	38.1
Retail, food preparation/processing	16.7	22.2	11.9
Transport, tricycle, pedicabs, etc.	6.4	11.1	2.4
Transport, bus, jeepneys, taxis	1.3	2.8	0.0
Financing	1.3	2.8	0.0
Communication	1.3	0.0	2.4
Personal services	1.3	2.8	0.0
Repair and other services	6.4	13.9	0.0
Recycling	6.4	2.8	9.5

**Legal personality.** Nearly 72 percent in the non-upgraded communities were not registered compared to 52 percent in the upgraded communities.<sup>17</sup>

<sup>15</sup> mainly pig raising

<sup>16</sup> recycling here refers mainly to the retrieval stages: waste picking, organizing materials, and selling to dealers or junk shop owners. No processing is generally involved.

<sup>17</sup> Over 10 percent were registered with municipal offices (12 percent in upgraded and 11 percent in non-upgraded communities) while an average of 8 percent were registered with barangay offices (4 percent in upgraded communities and 11 percent in non-upgraded). Around 8 percent on the average were registered with Land Transportation Office (mostly in upgraded communities with 12 percent compared with 4 percent in non-upgraded communities).

**Reasons for starting business.** In the upgraded communities, 28 percent preferred to be self-employed since they could earn higher incomes, 24 percent said they needed to have supplementary income. Around 24 percent were retrenched.

In the non-upgraded communities, 25 percent similarly said they preferred to be self-employed because of the expected higher earnings. However, a higher percentage, 54 percent, said that they needed supplementary income or had no other employment.

**Location of business.** Except for 20 percent who were ambulant operators and 4 percent who worked at their customers' house, almost all of the businesses were being conducted from the home. Around 57 percent had set aside some space for the business within the house while 34 percent conducted their business within the house, often in the living room. Around 30 percent had a structure right outside of the house for the business (cited mostly by those who constructed some space for livestock).

Nearly 60 percent of those in the upgraded communities were located by the access road (cemented) compared to 25 percent in the non-upgraded communities (earthen access road). The rest were along a footpath (40 percent in upgraded communities and 71 percent in non-upgraded communities).

**Age of enterprises.** More than half of the enterprises in both upgraded and non-upgraded communities had been around for more than 5 years (56 and 62 percent respectively). For both, a little over 25 percent were more than 10 years. For the rest, however, the upgraded communities had slightly older businesses as only 14 percent were only two years old at most compared to 30 percent in the non-upgraded communities. The average age of enterprises in the upgraded communities was 8.38 years while that in the non-upgraded communities was 7.16 years.

**Initial and current capital.** Those in the upgraded communities began with an average initial capital of P21,143 while those in the non-upgraded communities began with P8,417. Initial capital mostly came from personal resources (60 percent for upgraded communities; 68 percent for non-upgraded communities).

As far as the business was concerned (and without taking into consideration the house in which the enterprise was being conducted and other household appliances which would have the effect of raising quality of life), the current investment averaged P43,665 in the upgraded communities and P23,619 in the non-upgraded communities.

This should not be accepted without realizing that this pertained purely to business investment (working capital and a few equipment) and did not take into account the various household investments and human capital improvement that had been financed out of the businesses. In micro enterprises, the distinction between household and business is blurred in many respects<sup>18</sup> and any capital improvements in one (household facilities; education) improves conditions in the other (comfort in working; better educated children helping in the business).

**Number of workers.** In both groups, the average number of full-time workers was less than 2 (1.9 in upgraded communities and 1.7 in non-upgraded communities). This often consisted of only the owner and possibly the spouse. Only 8 percent in the upgraded communities and 7 percent in the non-upgraded communities reported having 5-9 workers, and this was the highest reported range. For both groups, part-time workers averaged only 0.5.

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<sup>18</sup> Often in microenterprises, the distinction between household and business is blurred *physically*, as both would share the same premises, and *financially*, as they would share the same expenses (e.g. electricity) and incomes would be distributed between them often without clear demarcation. Note for example that in both upgraded and non-upgraded communities, more than 80 percent of the respondents said that, for their household expenses, they would simply draw from their business income *as needed*. No allocation would be set through a definite budget or through salaries which owners would pay to themselves.

**Types of recording.** Over half of the respondents reported that they did not keep any business records whatsoever (52 percent in upgraded and 64 in non-upgraded communities). The rest mostly kept records of receivables only (28 and 14 percent respectively), cash book only (4 and 10 percent respectively) or job/purchase order only (8 and 7 percent respectively). A handful of those in the upgraded communities reported keeping track of income and expenses (12 percent in upgraded communities) while 7 percent in the non-upgraded group reported to have a journal or ledger.

**Access to markets.** Most of the respondents relied on their own community as their market, with those in the non-upgraded areas relying more on their immediate community (68 percent) than those in the upgraded communities (56 percent).

The findings on the source of raw materials is notable in that significantly more respondents in the non-upgraded group (43 percent) relied on their own community for raw materials compared to those in the upgraded group (8 percent). The latter would purchase their raw materials in the city markets (72 percent vs. 36 percent in non-upgraded) as well as in other cities within Metro Manila (12 percent vs. 18 percent in non-upgraded).

Therefore, even as both groups relied mostly on their immediate community as buyers for their goods and services, those in the upgraded communities have better access to external markets for their raw materials compared to those in the non-upgraded communities. This could have been influenced by the presence of access roads and footpaths in the community which facilitated transport.

**Business growth.** Around 40 percent in the upgraded community reported having experienced business growth in the past year compared to only 25 percent in the non-upgraded communities. (Rate of growth estimated was around 32 and 37 percent respectively.) A high of 46 percent in the non-upgraded communities reported that their business sales have dropped since last year (compared to 24 percent in the upgraded communities). Meanwhile, 36 percent in the upgraded communities and 21 percent in the non-upgraded communities reported no change in their business.

**Satisfaction with their business.** On a scale of 1 to 5, 5 being the highest, respondents in the upgraded communities assigned an average rank of 4.3 as their level of satisfaction on their businesses. Respondents in the non-upgraded group assigned a slightly lower rank of 3.3.

**Business problems.** The main business problems cited in the upgraded communities were: lack of working capital (32 percent); lack of capital for equipment (20 percent); intense competition and low sales (16 percent); poor infrastructure and utilities (8 percent); lack of time for business due to household responsibilities (8 percent); high cost of raw materials (4 percent) and lack of suitable premises (4 percent).

In the non-upgraded communities, business problems cited were: lack of working capital (68 percent), poor (and high cost of) infrastructure, transport and utilities (65 percent), intense competition, low sales and profits (36 percent); difficulty in collecting debts (21 percent), and lack of capital for equipment (7 percent), high cost of loans (7 percent), high cost and lack of raw materials (7 percent). Also cited were police harassment, poor sanitation, drug addiction of workers, and livestock diseases.

Notably, 32 percent in the upgraded communities said that they had no problems. (See Table 8.)

**Table 8: What would you consider as the main problems of your business? (multiple answers)**

	Total	Upgraded	Non-Upgraded
Cap - Lack of working capital	50.9	32.0	67.9
<i>Infra - Poor infrastructure and utilities</i>	30.2	8.0	50.0
<i>Infra - Transport problems</i>	5.7	0.0	10.7
<i>Infra - Lack (&amp; high cost of) suitable premises</i>	3.8	4.0	3.6
<i>Infra - High cost of infrastructure and utilities</i>	1.9	0.0	3.6
TOTAL FOR POOR/HIGH COST OF INFRA	41.6	12.0	67.9
M/S - Low profit	11.3	0.0	21.4
M/S - Intense competition	9.4	8.0	10.7
M/S - Lack of customers and sales	5.7	8.0	3.6
Cap - Lack of investment capital	13.2	20.0	7.1
Cap - High cost of financial services	3.8	0.0	7.1
M/S - Difficulty in collecting debts	11.3	0.0	21.4
RM - High cost of raw materials	3.8	4.0	3.6
RM - Lack of supply of raw materials	1.9	0.0	3.6
Oth - Lack of time and mobility due to family tasks	3.8	8.0	0.0
Lab - Lack of available workers	1.9	0.0	3.6
Reg - Police harassment and need to pay bribe	1.9	0.0	3.6
Poor sanitation	1.9	0.0	3.6
High cost of medicines for livestock	1.9	0.0	3.6
Livestock diseases	1.9	0.0	3.6
Lab - Drug addiction of workers	1.9	0.0	3.6
Lack of free time for family	1.9	4.0	0.0
No problem	15.1	32.0	0.0

**Business plans.** Despite their problems, both are still optimistic about their business. Around 68 percent and 92 percent of those in the upgraded and non-upgraded communities, respectively, planned to expand their business. Around 32 and 21 percent, respectively, said that they would make no changes. Only 4 percent in both groups said they would switch to another business while 4 percent in the non-upgraded communities declared that they would close down and find employment.

**Support from external agencies.** Most of the respondents had not received any external support for their business (84 percent in the upgraded communities and 64 percent in the non-upgraded communities). Most of the assistance received came in the form of finance (16 percent and 36 percent reported in the upgraded and non-upgraded communities respectively) and technology training (4 percent in the non-upgraded communities only).

## 5.2. Access to infrastructure

**Available infrastructure.** In both upgraded and non-upgraded communities, access to electricity was very high at 100 and 96 percent respectively. For the rest, especially with access roads and water supply, the differences were quite apparent. (See Table 9.)

**Table 9: What types of infrastructure are available in your community? (in %)**

	Upgraded	Non-upgraded
Electricity	100	96
Access roads (passable by vehicles)	84	46
Water supply- MWSS or NAWASA	32	4
Piped-in water	40	7
Purchase from vendors	36	50
Own deep well	0	25
Community well*	72	43
Septic tanks**	96	54
Drainage and canals	12	7
Solid waste collection system	72	43

\* For the upgraded community, the community well was part of the water supply system which was constructed in a planned manner; in the non-upgraded areas, these are the wells that were constructed over time

\*\* It must be noted that the septic tanks referred to here are not linked to any sewage system and are lined with cement only at the sides but not at the bottom.

**Infrastructure needed.** Drainage and canals were wanted in both upgraded and non-upgraded communities. Hence when asked about what types of infrastructure were still needed in their communities, 28 percent in the upgraded communities indicated drainage and canals and 61 percent in the non-upgraded areas indicated likewise. (See Table 10.)

In the non-upgraded communities, the following were said to be needed: drainage and canals (61 percent); cemented access road (57 percent); cemented footpath (32 percent); solid waste collection system (14 percent); water supply (11 percent); riprapping of creek (11 percent); telephone (11 percent); bridges (7 percent); toilet (4 percent); health center (4 percent).

In the upgraded communities, the following requirements were cited: cemented footpaths (64 percent);<sup>19</sup> canals and drainage (28 percent); cemented access road (24 percent);<sup>20</sup> cemented secondary roads (16 percent)<sup>21</sup>; telephone (16 percent); solid waste collection system (4 percent); and higher landfill (4 percent).<sup>22</sup> (See Table 10.)

<sup>19</sup> In the two upgraded communities, only the access roads were cemented and not secondary roads and footpaths. The third community undertook a landfill project but all roads are not yet cemented.

<sup>20</sup> Respondents here came entirely from the community which undertook the landfill but have not yet cemented the roads.

<sup>21</sup> See footnote 19.

<sup>22</sup> This applies to the community which undertook landfilling.

**Table 10: What other types of infrastructure are needed in the community? (multiple answers)**

	<b>Total</b>	<b>Upgraded</b>	<b>Non-Upgraded</b>
Concrete footpaths	47.2	64.0	32.1
Concrete access road (passable by vehicles)	41.5	24.0	57.2
Drainage and canals	45.3	28.0	60.7
Secondary road	7.5	16.0	0.0
Telephone	13.2	16.0	10.7
Solid waste collection/disposal system	9.4	4.0	14.3
Water supply - piped water	5.7	8.0	3.6
Water supply - own deep well	1.9	0.0	3.6
Water supply - piped water NAWASA	1.9	0.0	3.6
Rip rap creek	5.7	0.0	10.7
Bridges / footbridge	3.8	0.0	7.1
Sanitation / toilet	1.9	0.0	3.6
Higher landfill	1.9	4.0	0.0
No answer	5.7	8.0	3.6

**Solid waste collection.** The solid waste collection methods of the upgraded and non-upgraded communities were different. While 76 percent of respondents in the upgraded communities said that their solid waste were collected, only 18 percent in the non-upgraded communities said likewise. Instead, the latter's solid waste were burned (50 percent vs. 20 percent in the upgraded group), dumped (40 percent vs. 20 percent in upgraded communities), and buried (14 percent vs. 0 percent in the upgraded group).

It must be noted that the key difference was the availability of cemented access road which allowed garbage collecting trucks to enter the community. Respondents in the upgraded community reported that they had been burning and dumping their garbage prior to the road construction. Until now, the community in Tagig (at least 32 percent of respondents) said that they were disposing their waste through dumping and other means because their roads were not yet cemented and thus garbage trucks could not enter.

**Adverse effect on the business.** When asked how the lack of infrastructure affected their business, those in the non-upgraded communities cited *current* inconveniences while those in the upgraded communities recalled their problems *before* the community upgrading. Their responses are listed in Table 11, categorized according to the applicable infrastructure.

**Table 11: How did the lack of infrastructure affect your business? (in % of respondents; multiple answers)**

	Upgraded	Non-upgraded
<b>ROAD</b>		
Deliveries could not get through	44	36
Business not accessible to customers	24	25
Transport cost too high because of "special" transport rate	12	7
Theft because tricycle could not be parked near home for lack of road	12	0
Roads are impassable during rainy season	4	4
Roads cannot be used as dryer for raw materials during rainy season	0	4
<b>WATER SUPPLY</b>		
Unreliable water supply/Unsafe drinking water	28	25
Long queues to fetch water, reducing rest & productive time	20	0
High cost of water	12	11
Poor maintenance of livestock due to lack of water supply	0	7
<b>ELECTRICITY*</b>		
High cost of electricity	24	0
Unreliable supply of electricity	20	4
Could not work long hours at home-workplace	16	0
Could not do food retailing business	8	0
Neighbours hooking up with electrical lines, increasing cost	4	0
Could not do overtime at customers' house	4	0
Danger of using gas lamp with rugby	4	0
<b>OTHERS</b>		
Accident prone	0	4
Seasonal sales	4	0
No effect	4	21

\* It may be recalled that the upgraded communities cited the inconveniences they experienced *before* they had electricity while the non-upgraded communities were asked about *present* inconveniences. Since they currently have power connection under DAEP, no adverse effects were cited by the non-upgraded communities.

**Satisfaction Ratings.** Because of the lack of infrastructure in the non-upgraded communities, their satisfaction ratings were perceptibly lower than the upgraded group. On a scale of 1 to 5, 5 being the highest, the upgraded gave a high rating of 4.4 to their community; 4.5 to the location of their premises; 4 to the available infrastructure in their community.

The non-upgraded communities, on the other hand, a satisfaction rating of 3.2 to their community; 3.1 to the location of their premises; and 2.8 to the available infrastructure. These are summarized in Table 12.

Note that the satisfaction rating could be ascribed to the infrastructure in the community because, as earlier discussed, all of the communities were within close distance to major thoroughfares and commercial areas.

**Table 12: How satisfied are you with: (a) your community, (b) your location, and (c) available infrastructure**

	Upgraded	Non-upgraded
Your community	4.4	3.2
Your location (referring to premises)	4.5	3.1
Available infrastructure	4.0	2.8

**Cost of Utilities.** The monthly cost of electricity is similar for the upgraded and non-upgraded groups. This is because, as earlier indicated, both now benefit from power connection through DAEP. With respect to the monthly cost of water, the difference is quite substantial since the upgraded community spends on the average P344 per household per month while the non-upgraded community spends an average of P1,313 per household per month.

### 5.3. Differences between the upgraded and non-upgraded communities

It can be seen from the above that the economic activities in the upgraded communities performed better. This is gleaned from the fact that:

- fewer said their business has declined (24 percent vs. 50 percent in non-upgraded)
- more said they had no problems with their business (32 percent vs. 0 percent in non-upgraded)
- they had higher satisfaction rating on their businesses (4.3) than in the non-upgraded areas (3.3)
- significantly fewer were troubled by intense competition, low sales, low profit (16 percent vs. 36 percent in non-upgraded)

However, business investment in the non-upgraded communities grew much more than those in the upgraded communities. It was found that the direct business investment in the upgraded community grew from P21,143 to P43,665 or by 106 percent over 8 years compared to the non-upgraded communities which grew from P8,417 to P23,619 or by 180 percent over 7 years. It was cautioned however that this figure must be interpreted with care since business investment here does not necessarily include household investments, such as better homes and amenities, which impact on the home-based operations.

It was pointed out also that one cannot readily conclude that the better business performance found in the upgraded communities were linked to the infrastructure improvements. This is because the survey has also shown that the basic profile of the two groups were different on several counts (e.g. age, education, gender) and business performance may have been influenced by the differences in initial conditions. The link therefore is ambiguous.

Less ambiguous however would be the responses directly related to infrastructure. These are:

- lower satisfaction rating given to infrastructure by the non-upgraded communities at 2.8 vs. 4.0, which was the most divergent among all the satisfaction ratings given (i.e. on business, community and location)
- infrastructure-related problems, which figured as the second most cited business problem by the non-upgraded group (by 68 percent vs. 12 percent in the upgraded group)
- more frequently cited need for access roads, drainage, and solid waste disposal system in the non-upgraded communities. Unexpectedly, relatively few cited water supply despite the high costs being paid. This may reflect a certain measure of tolerance of the situation.
- difference in cost of water per month between the two groups (i.e. P344 per household in the upgraded group and P1,313 per household in the non-upgraded group). The stated amount is not entirely a business expense since not all respondents use water as input. However, at the least,

water is a welfare facility to which the owner and workers must have ready access and thus part of the water cost should be considered as a business expense.

- solid waste collection system was in place in the upgraded community (used by 76 of respondents vs. 18 percent in non-upgraded community) in contrast to the system of dumping and burning in the non-upgraded community (89 percent vs. 40 percent in upgraded community); as pointed out, this was largely due to the availability of cemented roads through which garbage trucks could pass
- It is not certain that the greater access to external markets by the upgraded communities for inputs and raw materials (84 percent vs. 54 percent in non-upgraded areas) was due to the presence of access roads and footpaths, though this may be surmised.

#### **5.4. Differences between pre-and post-upgrading conditions<sup>23</sup>**

The above tried to discern differences between the upgraded and the non-upgraded communities in an attempt to find out the impact of infrastructure improvements on the respondents' businesses.

This section looks at the changes in pre-and post-upgrading business conditions *within the upgraded communities* as a result of infrastructure improvements. This portion is based on both qualitative and quantitative data collected during the survey.

It must be noted that respondents did not maintain any records on their incomes and expenses. Thus, any quantitative changes reported would be based merely on the respondents' recollection.

The discussion below is categorized according to the type of infrastructure improvement and is summarized in Table 13.

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<sup>23</sup> In this section, the names of cited respondents (including those in case boxes) have been changed to protect their privacy. Their incomes have also been modified for the same purpose as well. The revised figures however reflect the same growth and turnover ratios, where applicable.

**Table 13: Summary of Reported Changes in Business as a Result of Infrastructure Improvements (Road and Water)**

	Cited by % of resp	Ave % change		Cited by % of resp	Ave % change
OUTPUT			INPUT		
Started a business	12		Electricity cost	44	- 40.8
			Water cost**	40	- 52.4
Sales / production	48	+ 90*			
Higher sales/production	32	+ 174	Transport cost to sell goods	8	decreased
Lower sales/production	16	- 80	Transport cost to get materials	20	
More clients served	4	+ 150			
More clients types served	8		Can work from home	16	
More competition	8		More hours worked	8	
Reduced seasonality	4		More hours rest	20	
			Time freed for work / rest		44

\* weighted average of all responses

\*\*At least 32 percent of the respondents had been getting water from free sources (water spring or community well) and thus the new water system constitutes a new cost to them. Thus, of interest here would be the response of 68 percent of the respondents, of which 60 percent (or 40 percent of total) reported an average decrease in cost of water by 52 percent.

### 5.4.1. Roads

#### a. Lower cost of maintaining markets

One of the cited benefits of road construction (16 percent) was that micro enterprise owners could operate now at home instead of constantly seeking out their customers outside or else rent shops in commercial areas.

This was found to be especially so among the more entrepreneurial operators who, despite enormous odds presented by the absence of infrastructure prior to the community upgrading, had to seek their own means to sell their products and labour. Often this meant renting shops in commercial areas or daily transport to the city center to seek out customers.

For them, the availability of cemented roads in the community has allowed them to receive customers at home and thus save time on traveling to their customers or to their shops. They also saved money on both transport and rental cost. Some report better quality of life as they could be close to their families while earning a living. Case 1 relates one such experience.

#### b. Lower cost of transporting inputs and goods

Around 28 percent of the respondents reported that the costs of transporting goods and inputs have gone down due to road cementing. While this referred to monetary costs, other costs saved were the time and physical exertion involved in purchasing raw materials and selling goods.

Other respondents incurred the additional cost of taking public transport which could now ply the access roads near their homes. However, they did not report the additional monetary cost but instead cited business improvement as well as saving travel time now that they have cemented roads.

In Tabing Ilog, Tony Simbulan, a sandalmaker, would trek for half kilometer from the jeepney stop to his house while carrying a sack of raw materials. Now, with road access, tricycles are available at the jeepney stop to take him to his house. This provides him with added comfort and also allows him to purchase more materials since he is no longer limited by how much he can carry over long distances.

For Dorotea Cruz of Cupang who still prefers to walk to the next village to buy ingredients for her bakery business, it now takes her less than 30 minutes to walk on the concrete road what used to take her at least one hour to reach through muddy roads.

### **Case 1 – Felix Upholstery**

Felix Santos makes upholstery for vehicles and living room sets. He and his wife settled in Tabing Ilog in 1996. At this time, Felix was working in a shop where he would receive 60 percent share on every upholstery job that he did.

In 1998, the couple decided to strike it out on their own. They realized that they could do the same type of work but earn more if they had their own shop. At Tabing Ilog, they started offering their own upholstery in 1996-1997. At this time, the roads in Tabing Ilog were not yet cemented. Felix sought out customers in Marikina, as he was embarrassed to invite potential customers to their shop. The roads were dusty on dry days and were muddy during rainy days. The Santoses found that on the average they would have only one or two upholstery jobs a month. Soon they realized that they could not earn enough in their location.

In 1998, the couple decided to rent a shop in the commercial area of Concepcion, Marikina. For two years, they rented a small room for P2,000 per month. Here they enjoyed brisk sales, completing 6-7 jobs a month. They were also employing 3-4 workers.

Still the couple was discontented because their rental and electricity costs were too high. In effect, since the business was earning a net income of P2,000-2,500 per upholstery job, the rent and electricity costs would eat up the income earned from almost two upholstery jobs. At the same time, the couple also feared that their rent would be raised to P3,500 per month.

On their eighth month at Concepcion, Marikina, the road in Tabing Ilog was already being cemented. After the road improvement was completed in early 1999, the couple returned to Tabing Ilog to settle and to set up shop. Today, the business of the Santoses averages 3-4 jobs per month. This volume is slightly lower than that which they realized in Concepcion, Marikina. However, the couple is more satisfied now since they need not pay rent and the family can stay together. Given their net earning per upholstery job, the Santoses are now earning approximately P15,000 a month.

### **c. Greater availability of inputs**

Some (8 percent) said that they now enjoy greater availability of inputs. Among them were sari-sari store owners who, with concrete roads, began enjoying free delivery of goods directly to their doorsteps. These goods include cooking gas, liquor, softdrinks, and other household goods.

Although few reported incurring lower cost in obtaining inputs, a large proportion of respondents in the upgraded communities (84%) actually travel out of their communities to get their raw materials. Thus, it may be possible that they are actually enjoying the benefits of the road improvement in obtaining inputs and raw materials more than they could recall. Case 2 illustrates how road improvement has increased the supply of inputs to a junk shop operator.

#### **d. New businesses and new competition**

**Businesses resulting from greater access to inputs.** Greater availability of goods also led to the creation of new businesses (12 percent). Many of the new businesses however tend to sprout in the relatively easy-entry sectors; i.e. mostly variety stores which are easily operated by those with low levels of skills. It may be recalled that community leaders in Tabing Ilog, Marikina City, observed that the number of variety stores had tripled in their community since the road was cemented.

The downside is that newly created businesses cut into the market shares enjoyed by existing businesses. When the total market size is not changed (e.g. population within a community), the growth of new and similar businesses eats up slices of the same market. Thus, a few entrepreneurial store owners in Cupang and Tabing Ilog who had established businesses before the community upgrading and who had enjoyed large market shares prior to road improvement, reported that their sales suffered after the road improvement (16 percent). Case 3 illustrates this experience.

Cases 2 and 3 illustrate two businesses which were affected differently by the greater availability of inputs after road improvement.

**Businesses dependent on road and dry land.** Then there are businesses which are dependent on the presence of access roads. Lito's school service (Case 3) would not have been possible without a cemented road. The vehicle would not have been able to ply the previously muddy roads. As well, he would not be able to park his vehicle near his house where safety is better ensured. Case 4 relates the story of Vangie Isidro, who started a business after a new market emerged out of the "dry land" in her neighbourhood.

#### **e. Higher sales and production**

Many businesses reported higher sales and production volume as a result of road construction (32 percent reported average increase of 174 percent). This was most pronounced in Cupang where the road construction was accompanied by an increase in passersby from other communities. Stores in Cupang reported doubling or tripling of their sales after the road improvement. This was especially so for those which were located right alongside the access road.

In Tabing Ilog, Ronald Ragas, a sandal maker, experienced at least doubling of sales since the roads were constructed. From 1-2 dealers who would order and purchase sandals from him on wholesale basis, he now services 5 regular dealers who would come to his house and make job orders. He said that his house is now more accessible now that the roads are cemented. He doubted that they'd make a special effort to come to him if the roads were muddy.

Again, these experiences must be balanced by the opposite experience; that of reduced sales and production especially in activities which are of the easy-entry type (16 percent reporting an average drop of 80 percent). This was reported by long-time entrepreneurs whose market shares were eaten up by new competitors after the road improvement. This was also reported in less populated communities such as Tabing Ilog since all stores had to compete for a very small market.

Combining the responses of the 48 percent who reported both positive and negative effects, the weighted average change (or net improvement) in sales and production volume was 90 percent.

### **Case 2 – Julio's Junk Shop**

Julio Torres has been in the junk shop business for over 10 years now. He used to live in Manila where he collected disposed bottles and papers from houses using a wooden pushcart. After moving to Cupang in 1987, Julio decided to set up his own junk shop, starting with only P600. He'd receive the deliveries of youths like himself. Today, Julio operates his business with a capital of P20,000 accumulated mainly from retained earnings.

Julio gets his supplies of bottles and papers from those who'd collect from nearby subdivisions. According to him, ever since the road was cemented, he has been receiving more and more deliveries. Normally, Julio would accumulate a certain quantity of recyclable materials, after which he'd contact a middleman to pick them up. These are then delivered directly to factories.

Previously, Julio would have enough stock to make one delivery per month. Ever since the road was constructed in 1999, Julio would receive more materials such that even before the end of one month, he would have enough to sell to the middleman. Julio normally earns a net income of P11,000 per delivery. Given more frequent deliveries after the road improvement, averaging one delivery every two or three weeks, Julio estimates that he now earns 30 percent more each month.

### **Case 3 – Lito's Sari-Sari Store**

Lito Logan began his sari-sari store in 1998 after he availed of the early retirement programme at his company where he worked for more than 10 years. He invested P60,000 in his sari-sari store. At the start, he enjoyed brisk sales. This went on for about a year.

When the road in his neighbourhood was cemented in 1999, he observed that the revenues from his store dropped from P4,000 a day to P1,200. This represented a reduction of a hefty 70 percent in sales.

Variety stores similar to that of Lito sprouted (tripled, community leaders believed) throughout the neighbourhood thus eating into the previous market share of Lito. This was because it was easier now for people to purchase stocks outside the community. Also, dealers would come into the community with delivery trucks bearing consumer goods, such as softdrinks, liquefied petroleum gas, and toiletries, and would sell to the stores.

Because of this, Lito had to start other businesses, such as the school service he recently set up. Lito feels that it is very tiring to do business.

### **Case 4 – Vangie and Alfombra Slippers**

Vangie Isidro moved to Tipas, Tagig, in 1992. Her family settled in Tipas despite the fact that the area was still then a rice paddy. The rent they were paying in Pateros was eating too much into their household income.

When Vangie moved to Tipas, she was working in a slipper-making shop in Pateros. They were making slippers made of alfombra, a felt-like cloth. She was earning wages on a piece rate basis. She would earn P13 for each pair of slippers. On an average day, she would earn an income of P260 out of 20 pairs.

After the community started a landfilling initiative in 1995, Vangie saw that the dry earth would make the residents consider using alfombra slippers. Prior to the landfill, the area would get flooded and makeshift bridges would serve as walkways. Alfombra was then out of the question. After the landfilling, Vangie tried to set up her own slipper making business. She and her husband invested P15,000 and purchased a grinder, shoe lasts and raw materials.

Today, she produces 50-70 pairs of slippers per week from which she can earn as much as P8,000 – a substantial improvement from her previous income of P260 a day or less than P6,000 a month. From her slipper-making business she was able to purchase a tricycle from which her family earns an additional income.

## **f. Safety of vehicles**

Transport operators and drivers (8 percent) reported greater security of their vehicles after the road improvement. This is mainly because they could park their vehicles near their homes rather than in public lots such as the basketball court (Tipas) or the entrance of their community near the highway (Cupang).

Eleandro Magpayo, one of the tricycle operators in Cupang, reported one incident where the fuel and fuel cap of his tricycle were stolen while his tricycle was parked at the basketball court. Carlos Aldaba of Tipas did not report any theft, only some anxiety when parking his tricycle on the main road during rainy days as his street would be muddy. Often, he forces his tricycle through mud so that he could park it by his house.

## **g. Home/Workplace improvement**

Community leaders in Tabing Ilog observed that house improvement followed road construction since delivery trucks carrying construction materials could now enter the community.

## **h. Dignity**

As earlier mentioned, the leaders of Cupang said that they seem to have earned newfound respect from the neighbouring subdivision after their road was constructed. Previously, the neighbouring community would allegedly harass vehicles that were passing through (since they did not have right of way) and would show hostility towards them. Since the road in Cupang was cemented, attitudes of their neighbours had changed.

### **5.4.2. Electricity**

#### **a. Lower input cost**

With legitimate power connection under DAEP, 48 percent reported reduced electricity cost by as much as 41 percent. Prior to the connection under DAEP, electricity connection was difficult. Community residents would have to tap into the electrical lines of adjacent communities. In Cupang and Tipas, residents would tap into the connection of those with individual lines and “rent” electricity at P50-200 per appliance unit. (In Tabing Ilog, residents simply went without electricity.)

Previously, even if installation was possible, each family would have to shell out around at least P4,000 in order to finance transformers and electrical posts. This was unaffordable to most residents. Under the DAEP, individual connection is obtained at a lower cost (P2,000) and at easier terms (five years to pay) and is thus more affordable. Most claim that they now pay lower electricity costs even with more appliance units.<sup>24</sup>

#### **b. Reliable supply of input**

With individual connection under DAEP, electricity is also more reliable. Around 20 percent reported that, prior to DAEP, they had been inconvenienced by unreliable power supply. Power would be cut off whenever the main owners would be unable to pay the bills.

From the side of the main owner, the lack of access to power supply within the community poses a burden on them since many would seek to tap into their line. This pushes up their electric bills which

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<sup>24</sup> Recently, however, costs are pushed up by what is called PPA, or the purchased power adjustment (which reflects the cost of power purchased by Meralco mainly from the National Power Corporation). Because this is equivalent to P1.82/kwh on top of the basic charge of P1.784/kwh, the respondents complain that the PPA has doubled their electricity cost.

they may be unable to service especially if they are not able to control their funds and manage the payments from their “tappers.” The main owners therefore also experience unreliability of power supply when their accounts get suspended.

With DAEP, however, power interruptions occur regularly especially during peak hours or peak periods. During Christmas time and New Year’s Day, for example, Cupang and Tipas report that power interruptions are the norm. This is because the transformer would get overloaded.<sup>25</sup>

As far as the business is concerned, Randy Eman, says that their work is interrupted in the evenings during power interruptions. A sandal maker in Cupang, Randy adds that during power interruptions, they make sandals by the gas lamp and this poses some hazard since the glue which they use is an inflammable substance.

**c. Use of power-dependent equipment: New product lines, new markets**

New businesses which are dependent on electrical appliances were also created. This is most commonly seen in variety stores where electrical connections would be followed by refrigerators and then, subsequently, new products. Such products include meat, ice candy, softdrinks, liquor, all of which need to be refrigerated.

Bonibelle Delute says her husband started a meat retailing business after Tabing Ilog obtained power connection. This is because the meat which her husband buys need to be stored in a freezer. This new business provides them with an additional income of P3,000 a month, an increase of 42 percent over and above her husband’s monthly salary of P7,000.

In the case of Ronald Rogas who makes sandals and slippers in Tabing Ilog, power supply has enabled him to service a nearby market. This is because he can now use his equipment at home and sell in nearby communities. Ronald Rogas’s story is told in Case 5.

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<sup>25</sup> Apparently, the low cost of installation under DAEP (of P2,000) is due to the fact that there exists only one line and one meter for the entire community and households have sub-meters and smaller electrical lines. This stands in contrast to individual connections where each household has one main electrical connection and one main meter. It is for this reason that overloads frequently occur. Some communities report occurrences during weekends and holidays.

### **Case 5 – Ronald Rogas and Sandal-Making**

Ronald Rogas moved to San Miguel, Marikina, in 1993. Aside from the hope of owning the land in San Miguel, Ronald thought that Marikina would be a good location to conduct his business since it is close to the source of raw materials. Ronald makes and sells sandals and slippers for a living.

During the first three years and before electricity was installed in San Miguel, Ronald would bring his materials to Baclaran, 15 kms away, where his wife stayed and worked, in order to use his electric grinder. The grinder smoothens out the sidings of the rubber soles. After finishing the sandals he would sell his goods in the nearby market in Baclaran.

Electricity was finally installed in San Miguel in 1996. Since then, Ronald no longer had to travel to Baclaran to do the finishing on the sandals as he could already finish them entirely at home. Since then, he has also tapped neighbouring markets in Marikina. He now supplies to three shops in town. At the same time, he supplies to dealers who would now come to his house to make and collect job orders. He could conveniently service them from his house now that he can complete production in the same location.

The cost of having to transport his materials to Baclaran where the grinder used to be kept was greater than the P28 fare it would cost him. It included the time spent on travel, the opportunity loss of servicing nearby markets, and the limited volume of goods that he could sell as determined by the weight that he could carry.

Today, Ronald claims that sales tripled since the community upgrading. He now earns a monthly income of P8,000 from the business on top of his wife's salary of P5,000.

#### **d. Work longer hours**

Residents in Tabing Ilog report that they could work in the evening after electricity was introduced in the community. Among the three communities surveyed, only that in Tabing Ilog went without electricity for three years. Thus, 8 percent said that they could now work longer hours and all of these came from Tabing Ilog.

Mary Ann Mangilao and Ronald Ragas said that they could work for three hours in the evening under fluorescent light. Previously they could work for only one hour by the gas lamp as they would soon feel sleepy.<sup>26</sup>

Mary Ann additionally said that she could now stretch her work into the evenings, and this enabled her to attend to her children during the day. Previously, she would have to rush all of her work while there was sunlight. Ronald estimated that he and his family could finish three dozens of sandals in a day now that they could work in the evenings compared to only one dozen when they did not yet have electricity.

#### **e. Dignity**

One of the residents in Tipas said that they would suffer indignities when the owner from whom they would tap electricity would monitor the appliances they were using. She related that, in a few occasions, the owner would barge into their house and turn off their television set while they're watching.

#### **f. Peace of mind in neighborhood**

Dionisio Reyes and Carolos Aldaba talked about how they felt safer coming home late from work from their customers' house and from plying the tricycle, respectively, now that they have streetlight.

<sup>26</sup> When asked if they experienced eye strain working by the gas lamp, both said that they did not.

### **5.4.3. Water**

#### **a. Lower cost and greater availability of input**

Around 40 percent of the respondents reported that their monthly water cost decreased by an average of 52 percent. Most of those who did not report reduced cost had been getting water from free sources (community well or spring). This accounted for at least 32 percent of the respondents. For them, such as those in Tabing Ilog, having a water supply system now represents a cost to them. But it was a cost which respondents welcomed. The only less favourable comment was that the cost of water was a little bit expensive and that MWSS (or now Maynilad or Manila Water Corporation) would have been cheaper if it was available.<sup>27</sup>

Those who reported a drop in monthly expenses came from Cupang and Tipas where the cost of water *per barrel* dropped by 90 and 76 percent, respectively, with the introduction of the water system. The average *monthly* cost dropped by only 52 percent however (despite greater cost reduction per barrel). Respondents said that this is because they were using more water now that the rates were lower and water pipes were connected right into their homes.

#### **b. More time for rest and work**

With piped-in water system (or in the case of Tabing Ilog, long hoses scattered throughout the community), 20 percent of the respondents said that they could have more time for rest or work – time previously spent lining up, waiting, and carrying water to their homes.

None reported however that collecting water interrupted their work hours. Instead, it was their rest time which they interrupted to do this errand. Respondents said that they would collect water before preparing for work (say at 3 o'clock in the morning) or in the middle of the day during their rest hours (after having lunch and before resuming work). Though none reported being distracted at work or getting sick due to lack of sleep, there are expected health costs to the curtailment of sleep and rest.

#### **c. Lower sales of water**

Since a few earned a living from selling water prior to the installation of the water system, two respondents signified lowering of sales, by as much as half of what they previously earned. They however did not signify dissatisfaction particularly since they also benefited from the water system. Their other businesses have also taken up the slack.

### **5.5. Summary of Findings**

To recall, this paper set out with the following questions.

First, it examined whether infrastructure improvements brought about business growth and development. It was pointed out that one way of looking at this would be to discern changes in production levels, sales volumes, and business expenses. Through this line of inquiry, what was being examined was whether infrastructure improvements had been able to provide better net incomes, more economic opportunities and better health.

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<sup>27</sup> As indicated in Annex 1, the cost of water in Tabing Ilog was P12 per barrel compared to the mentioned water company whose equivalent cost was P2-3 per barrel. The main water lines are not available however in the vicinity.

Second, it was to be observed whether the benefits brought about by infrastructure improvement varied according to certain factors, such as the size of the enterprise, technology used, kinds of activities, and types of clients served by the enterprises.

Thirdly, the paper sought to look into the manner by which infrastructure was provided. Of interest is the way by which community upgrading was initiated, provided, maintained and financed. Key issues included suitability, affordability, and the sustainability of the infrastructure provided vis-à-vis the target groups.

Finally, this paper sought to gain insight into the specific roles of the public and private sectors in the entire process.

This section will summarize the findings based on the above points.

### **5.5.1. Business growth and development**

It was evident that improvements in sales volume, production levels and cost of utilities and transport were reported by the respondents. At this point, one could only take each item individually without being able to calculate *net* benefits. This is because the respondents did not keep records and relied merely on their memory and impressions. One would readily assume however that the combination of higher sales and lower costs translates into higher net incomes. But this was not reported as such and in fact it was physically impossible to calculate net income out of mere memory of situations that took place 2-5 years ago. However, all respondents cited improvements one way or another as far as their memory would allow.

Also, a substantial number of respondents said that their time had been freed for more rest, work and family. Although rest time and time for family (which were cited more often than work) may not be direct inputs to the business, these influence the level of physical and mental well-being which respondents bring to their business.

To summarize, Table 14 outlines and re-organizes according to the type of infrastructure improvement business improvements described above based on both quantitative and qualitative responses.

It may be noted that no one cited health benefits apart from more rest time now that they did not have to queue for water. This was because none reported health problems even in the absence of reliable water supply.

Although not directly related to business performance, better quality of life (more dignity, peace of mind in community) was cited as an all-around benefit that impinge on morale, confidence, mental health. Thus, it can indirectly affect business performance.

### **5.5.2. Forward and Backward Linkages**

It must be noted that there were no income benefits arising directly from the community upgrading itself. The road construction and electricity installation were done by the local government. Community volunteerism was engaged in the installation of the water supply system. The only employment that was created by the new infrastructure was that of the maintenance workers in the water supply systems who were paid either a monthly salary (Tagig and Tabing Ilog) or fee per installation and year-end income share (Cupang). Each community would have an average of three people involved in the maintenance work.

**Table 14: Summary of Net Improvements Resulting from Infrastructure Improvement Based on Quantitative and Qualitative Data**

Higher output	Lower cost and more reliable inputs (Higher cost)	Asset preservation / improvement	Better quality of life
<b>ROADS</b>			
<ul style="list-style-type: none"> <li>• New businesses</li> <li>• Higher sales and production</li> </ul>	<ul style="list-style-type: none"> <li>• Lower cost of maintaining markets</li> <li>• Lower cost of transporting inputs and goods</li> <li>• Greater availability of inputs</li> </ul>	<ul style="list-style-type: none"> <li>• Safety of vehicles</li> <li>• Home/Workplace improvement</li> </ul>	<ul style="list-style-type: none"> <li>• Dignity</li> <li>• Can work from home and be with family</li> </ul>
<b>ELECTRICITY</b>			
<ul style="list-style-type: none"> <li>• Use of power-dependent equipment: New product lines, new markets</li> </ul>	<ul style="list-style-type: none"> <li>• Lower cost of electricity</li> <li>• Greater reliability of electricity</li> <li>• Work longer hours</li> </ul>		<ul style="list-style-type: none"> <li>• Dignity</li> <li>• Peace of mind in neighborhood due to streetlights</li> </ul>
<b>WATER</b>			
	<ul style="list-style-type: none"> <li>• Lower cost and greater availability of water</li> </ul>	<ul style="list-style-type: none"> <li>• More rest time</li> </ul>	

### 5.5.3. Intervening variables: size, technology, activities & clients

Enterprises which benefited from the community upgrading did so regardless of the *size* of their activities or whether they were growing or not. In fact, it was the more entrepreneurial ones which suffered as a result of the upgrading since they lost their market shares to new businesses which cropped up after the upgrading. This was discernible mostly in the relatively easy entry types of businesses such as trading. Enterprises which were more skill-intensive such as upholstery, footwear, were affected less abruptly although in time they said that competitors slowly increased.

It could not be said also that *economic activities* that were more technology-intensive benefited more than those which were not. Although this was apparent in the case of Ronald Rogas who welcomed using his grinder at home with the introduction of electricity, it was not only the technology-intensive which benefited. In fact, enterprises using low levels of technology prior to the introduction of power were able to use power-dependent equipment for their business (e.g. refrigerator) after power installation. Thus, it seems that even as enterprises had adapted to their limited conditions prior to the community upgrading, they were not likely to remain so after infrastructure is introduced. Rather, they would evolve in their use of technology.

Enterprises which catered to external *clients* did benefit more from the community upgrading, especially road construction. The benefit came largely in the form of reduced costs in seeking out and maintaining markets. They spent less time and expense going out since customers could now easily find them. One of them even benefited from telephone connection and this further lowered their cost in traveling for sales or marketing purposes.

#### **5.5.4. Provision of infrastructure: suitability, affordability, sustainability**

In these three communities, the infrastructure were *suitable* to their needs since, in the first place, it was through the community initiative that roads, electricity and water were obtained. While some measure of dissatisfaction still remained, the satisfaction level of the respondents in the upgraded communities on their available infrastructure 4.0 (out of a highest score of 5) compared to 2.8 in the non-upgraded communities.

They were also *affordable* since the road did not cost them anything (except for the deed of donation to the local government in two cases which allowed use of public resources for the construction). Electricity was made affordable under DAEP, and the water system was set up by the community who knew exactly their own level of affordability.

These infrastructure are *sustainable* with the combination of public funds, donations, and private contributions from the residents. Where large outlays are required, for instance, road construction, public funds were utilized as these were unaffordable to the low income communities. The water supply system in one community was self-funded, while the two others utilized both donations and public funds, in addition to community contributions. It could be noted however that the self-funded water system had more limited capability since the community could afford only small pumps and tanks.

Electricity was made affordable despite enormous installation costs because the payment system was flexible and stretched over several years under DAEP.

In general, it could be said that these infrastructure are not totally affordable and financially sustainable especially where large outlays are required and where gradual payment systems are not in place. However, they can be affordable if proper payment systems are in place. As well, they are sustainable if they are community-driven. Where their financial means would fall short, the community could find means for additional support. (Conversely, it may be observed that where facilities are initiated by other than the end-users, such as the MWSS standpipes cited earlier, these could be underutilized and grossly mismanaged.)

#### **5.5.5. Role of government and other stakeholders**

The role or function of government can be categorized into three: 1) as an environment enabler, 2) as facilitator of private-public partnerships, and 3) as financier and coordinator of infrastructure projects.

Government's primary function is to set the standards for the construction of buildings, roads, and waterworks, which directly affect the cost and design of particular infrastructure facilities (Menendez 1991). This regulatory function is important in maintaining a policy and legal environment that is conducive to the growth and expansion of infrastructure services in poor settlements.

It is not unheard of however that bureaucratic procedures and discretionary behaviour have unduly delayed the approval of community infrastructure improvements. Note that in one of the cases above, it has taken the community several years to purchase their land and get their roads cemented despite longstanding agreement with the landowner. Residents believed politics to be the chief cause of the delay. It may further be observed that it was through the close relationship of two communities to the local government which facilitated the grant of water pump in Cupang and road construction in Taging Ilog. This throws questions on whether other low-income settlements, less politically close to the local government, can have easy access to such infrastructure. Government has an important role to play in facilitating the approval and progress of community infrastructure initiatives, as well as in ensuring that this role is free from political considerations.

Government's second major function is to facilitate stronger partnerships within and between the private sector (which includes private investors, small-scale providers, and the community) and the public sector (government agencies and institutions).

The role of "broker or facilitator" is especially important in areas where private initiatives are being undertaken but continue to lack the necessary legal and logistical support (Menendez, 1991). For example, the implementation of DAEP could have been complicated by land ownership issues especially over lots on which the electric posts and other infrastructure would be constructed. It was through the guarantee provided by government, with possible expropriation acts, that these infrastructure and basic utilities were provided to low-income communities even in the absence of secure land tenure.<sup>28</sup> This is also exemplified in the case of water supply where private concessionaires were obliged to construct a standpipe in low-income communities whether or not there is secure tenure.

Finally, government's third major function is to finance and coordinate infrastructure projects. Although micro-infrastructure projects abound – through the initiative of communities as seen above – these had been few and far in between. Government has the necessary institutional and financial resources to propagate best-practice micro-infrastructure projects in other areas and to undertake direct production where private sector initiatives are completely lacking.

In the above cases, infrastructure improvement requiring huge outlays, such as road construction, would not have been possible without direct government involvement. Representatives of Marikina City Government said that it has taken upon itself the direct responsibility to provide or facilitate the provision of electric, water and road infrastructure in low-income communities. This is done through close coordination with the various stakeholders (i.e., private land owner, the community, and concerned government and private institutions such as the National Housing Authority, MERALCO, and Manila Waterworks).<sup>29</sup>

In all this, land tenure plays a critical role in making infrastructure available in low-income communities. As pointed out above, utility providers are generally averse to installing infrastructure without clear land ownership. Facilitating land tenure or ownership through affordable schemes is therefore part of government's enabling role. It also is the role of the private sector to make available lands to low-income communities at reasonable cost.

Non-government organizations and the business sector have a role to play in augmenting the resources and efforts of communities. All must view the payoff not only in terms of the direct access acquired by the community or as once-off beneficent acts on their part. More important they must see the payoffs in the incomes that are generated, in the assets that are preserved and built, in the healthy workforce from which they themselves benefit, and in a more secure citizenry that result in a better social environment.

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<sup>28</sup> Incidentally, DAEP is now completed and this means low-income settlements needing power installation have to go by regular means and cost – which can be unaffordable.

<sup>29</sup> In the Philippines, the responsibility of the local government to provide basic infrastructure and services is stated in two major pieces of legislation: Republic Act 7279, otherwise known as the Urban Development and Housing Act (Section 21), and Republic Act 7160 or the Local Government Code of 1991 (Rule 5, Article 24).

## 6. Conclusion

Residents in informal and low-income settlements often face considerable odds. Owing to the high land prices in the metropolis, they are often forced to live in distant areas and even on raw, undeveloped lands. Even as the metropolis benefits from the low-cost labour that they provide, they are left to their own resources to sustain their presence in the metropolis.

Due to the inadequate incomes which they earn as wages, however, many are forced to create their own employment through some business or economic activity. These are all carried out in very disadvantaged conditions. Residents have to ply through muddy roads, collect water early in the morning, pay exorbitant utility costs, and put up with unreliable and expensive power connection, if at all.

Ironically, where low-income settlements have access to basic utilities and transport, they pay more in absolute monetary amounts per unit consumed than middle- and upper-income residents who access through formal channels. This is not yet to speak of other costs in terms of time, curtailed rest, and insecurities.

The above survey has shown how communities have, through their own initiative, facilitated basic infrastructure provision in their communities. These are examples of demand-driven interventions, where community resources either are entirely used for direct provision or are leveraged against external support.

It was seen how improvements mainly in road, electricity and water supply have ameliorated the livelihoods of the people, for instance, by increasing sales within their economic activities, reducing costs of transport, ensuring reliable supply of affordable utilities, preserving assets, and improving work and life conditions. Certainly, there have been negative effects of such provision, but it was also shown that the benefits outweighed the costs.

It was seen how such demand-led infrastructure provision is suitable, affordable and sustainable. It was seen how up-front costs were shouldered, entirely or in part, by community contributions. While they may not be able to finance the costs of installation and maintenance entirely, especially for infrastructure with high capital requirements (e.g. road), the sustainability can be found in the demand-led nature of the provision. The communities find ways and means to obtain the amenities which they need and, once secured, they take pains to maintain it well.

There are important roles to be played by government especially in promoting these types of private sector initiatives. One of these roles is to facilitate the approval and progress of community-led initiatives. Another role would be for government to play the part of a broker or guarantor especially if the infrastructure provision depends upon security of land tenure for its installation. Finally, government has the role of direct provision where no private players can supply the need.

Non-government organizations and the enlightened business sector have a role to play in augmenting the resources and efforts of communities. They must see the payoffs in the incomes that are generated, in the assets that are preserved and built, in the healthy workforce from which they themselves benefit, in a more secure citizenry and a better social environment.

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**Annex 1:  
Profile of Surveyed Communities**

**THE UPGRADED COMMUNITIES**

**Location** : **San Miguel Phase I, Parang, Marikina City**  
**Name of Association** : **Tabing Ilog Nangka Homeowners Association (TINHA)**

**Location**

The community at San Miguel Phase I is located right behind the country's biggest tobacco factory and is only two kilometers from the city center and approximately five kilometers from the main commercial center in Cubao, Quezon City. The site bears features of both the urban and the rustic as it has easy access to the city center on one side and is lined by a river and lush mountains on the other side.

Most of the early occupants of the land were employees of the tobacco factory. Upon settling in 1993, the residents immediately negotiated land purchase with the owner. A year after, the community drew up and signed a letter of intent and a memorandum of agreement with the landowner. However, the process of land purchase was delayed allegedly because of issues emanating from the municipal government. To this day, the actual purchase hasn't taken place but is expected to take place within a year's time.

In the meantime, the residents have initiated a number of infrastructure changes, foremost among which were electrification, road cementing, and water supply provision.

Over the past years, the zonal value of the land has increased, from P400 per square meter in 1989 to P800 in 1998 and, finally, to P2,600 at the present time. According to the leaders, zonal values rose after Marikina became a city.

**Population**

Starting with 83 families in 1994, the community grew to 198 in 2001. This increase in population was deliberate as the community needed a sufficient number of households to make the purchase price more affordable for each household. With its total land area of 1.27 hectares, the density of Phase 1 is 64 square meters per household.

The population of Phase 1 as well as those of its surrounding areas are as follows:

- Phase 1 – 198 households
- Phase 2 – 86 households
- Phase 3 – 185 households
- Phase 4 – 312 households

Based on their observations, the leaders gave the following profile of their community according to employment:

- Factory workers – 43% of working people
- Shoe makers – 30% (where 5% are employed)
- Office workers – 20%
- Retailers and tricycle drivers – 7%

Thus, in total, own-account workers was estimated to make up 32% of the working population in Phase 1. Average monthly income of a household in Phase 1 was estimated at P5,000.

## **Infrastructure Improvements**

Upon the initiative of the residents, several infrastructure improvements were carried out. These are indicated below together with the year the improvements were introduced:

Electricity	–	1996
Water supply	–	1996
Concrete access road	–	1999

**Electricity.** Electricity was supplied in 1996 under the auspices of the Depressed Areas Electricity Program. Prior to this, community residents had no electricity at all and would simply use gas lamps in the evenings. When DAEP was introduced, more than 100 families were provided with power connections.

Following the power installation, the association worked on having streetlights installed along the main access road. The streetlights thus followed a year after in 1997.

**Water supply.** The provision of water in 1996 was completely a community effort. Since the community was far from the pipelines of MWSS, the local association built its own deep well and set up its own private water supply. The local association began servicing the 198 residents of Phase 1 and has now expanded to other phases. It now reaches 250 households.

Prior to the installation of the water supply, community residents would collect water from a shallow well or from a spring by the river. As they often had to line up to get water, some residents felt that this meant loss of productive time or loss of needed rest. While some would drink the water from these sources, those who were more cautious would purchase drinking water outside of the community.

In putting up the water system, the association spent a total of P150,000. This was financed out of the interest earned from the association's time deposit – a pool of funds collected from the 198 members, at P3,000 per family, to finance all expenses required for processing land purchase and other related costs. Additionally, each household pays P30 as monthly dues.

The water supply emanates out of the deep well, which is approximately 24 feet deep and which is lined with eight (8) culverts (obtained for free from a construction materials company). It is powered by three (3) pumps of 2.5 horsepower each (purchased at approximately P8,500 per pump). Two additional pumps are put on reserve. Water is distributed through several hoses which are laid out throughout the road spanning the entire length of the community.

Water is sold at P12 per barrel or P1.20 per container. Revenues from the operations hover at P25,000. Expenses include electricity (at an average of P8,000 per month) and allowance of three (3) water tenders (at P900 per head per week or P10,800). The net income comes up to 5,000-6,000.

The association envisages that in due course it would be able to set up piped-in water for each household. In order to do this, however, it foresees the need for a bigger motor pump.

**Main access road.** The main access road was cemented by the Marikina municipal office in 1999. This materialized after much prodding from the association. As part of its efforts to have the access road cemented, the association also donated the one-kilometer land to the municipality as a public road.

Prior to the road improvement, the residents had to endure several inconveniences. School-bound children and work-bound adults had to wear plastic bags on their feet and carry their shoes until they reached concrete road. Small-scale producers had to walk some half kilometer while lugging their raw materials to their homes or their finished products to their customers. Houses remained makeshift because trucks delivering construction materials could not travel on muddy road. In cases where deliveries were possible, vehicles had to pass through an adjacent subdivision (the community lacked

right of way) and, to be allowed to enter, they needed to pay “toll” fees ranging P100-300 per delivery vehicle. Tricycles were charged P5-10 per entry.

Road improvement and the acquisition of right of way brought about immense relief to the residents. Since delivery trucks could now pass, it was not long before the face of the community began to change. Homes were improved and their makeshift appearance gradually shed off. With the roads, garbage trucks likewise started coming regularly. Businesses multiplied threefold, the leaders surmised. Whereas only 5 percent of the community had variety stores before the road improvement, this proportion had grown to 35 percent after the improvement. Thus, this also meant greater competition within the community and dwindling market shares for those which were already operating before the improvement.

**Sanitation.** For sanitation, each household built a septic tank in their homes. Often, these septic tanks have cement linings on the side but none at the bottom. They are also not connected to any sewage system. Each septic tank has a depth of 10-15 feet and residents found this would last for 10 years for a household with 2-3 users.

### **Solid Waste Disposal**

Since the road was cemented and the community established its own right of way, garbage trucks began reaching the community. Garbage is now collected twice a week. Prior to the road construction, residents would burn their garbage and some would dispose of them in the river.

**Location** : **Purok 5, Zone 8, Cupang, Antipolo City**  
**Name of Association** : **Samahan ng Magkakapitbahay ng Cupang, Inc. (SMC)**

### **Location**

Purok 5 is one of the six large villages within Cupang, Antipolo City, and is located right on the boundary of Marikina City. Though an urban poor community, it is situated next to middle-class subdivisions and is a few kilometers away from the city center.<sup>30</sup>

Purok 5 encompasses 5 hectares, of which 2 hectares have been purchased by the residents through a community mortgage programme in 1996.<sup>31</sup> Most of the residents have been occupying their lots on the basis of “informal” rights, which they have purchased from previous occupants. Several groups are now in the process of negotiating with the landowners for eventual lot purchase.

The zonal value of the land in Cupang has increased from P850 four years ago to P1,500 at the present time.

### **Population**

Many of the residents of Purok 5 have been in the community since the mid-1980s. Purok 5 currently has a total of 4,000 households occupying a land area of approximately 5 hectares. This yields an average density of 12.5 sqm per household. The actual density of the 2-hectare lot which has been purchased is lower at 119.76 sqm per household (i.e. 169 families spanning 2 hectares).

Purok 5 is next to five other villages which makes Cupang as a whole a well-populated and bustling community. Purok 5 interacts closely with three of these communities, residents of which pass through Purok 5 to go to the city center. These villages are listed below together with their populations:

Purok 3 – over 2,000 households  
Purok 4 – over 2,000 households  
Purok 6 – over 4,000 households

This adds up to a total of 12,000 households constituting the potential market of Purok 5’s businesses.

Community leaders estimate that around 70 percent of working residents are employed, mostly in factories and on contractual basis. Around 30-35 percent are self-employed or are running their own small businesses. Many of these are drivers, shoe makers, mechanics, and construction workers. The average monthly salary of each household is P5,000.

### **Improvements**

Over the past years, the following infrastructure improvements were carried out:

Electricity – 1995  
Water supply – November 2000  
Concrete access road – May 2000

**Electricity.** Power connection in Purok 5 was installed under the Depressed Areas Electrification Program. Prior to the electrification, only those living near the main road had power connections and the rest of the community would tap into their line and pay mutually agreed fees.

In Cupang, owners would charge around P50-100 per month per appliance unit. Depending on the number of their household appliances, each family may be paying P400-700 per month. Presently, given legitimate power connection, many say that they are paying less per month even as they are

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<sup>30</sup> This refers to the main commercial area of Marikina City rather than Antipolo City as the former is more accessible.

<sup>31</sup> The land was purchased in 1996 at P150 per sqm.

now using more appliances and household conveniences. Were they to pay under the previous system, their monthly bills would run well over P1,000.

**Water supply.** Water supply was installed by the local association with the assistance of the local government. Through its close relationship with the local government, the association successfully requested for one of five, 5-horsepower submergible pumps which the municipal government was granting to several communities in 2000.

After having acquired the pumps, the association was assisted by a Korea-based non-government association in drilling a deep well (35 feet deep) and installing the pump. Total project cost was approximately P2.2 million. While the water from the deep well is potable, it currently has sediments because of the mud that they had to throw in to control the strong gush of water while the well was being dug.

Presently, the association is maintaining the water supply. It has also installed individual piped-in connection at a fee of P2,000 per household. This amount covers the installation of a faucet outside of a house and includes materials (P1,400) and labour (P600 distributed among 4 workers). Installation of faucets and showers inside the houses is done by the household itself or by the association at an additional cost of P1,000 per household. This additional cost covers three faucets and one shower.

Water is sold at P10 per cubic meter, which is equivalent to P2 per barrel. This may be compared with the price of water residents used to pay, namely, P25 per barrel or P2.50 per container.<sup>32</sup> This represents a 92 percent reduction in their costs. Residents now say that they can use as much water as they want unlike before when they had to conserve the water they bought in containers.

A total of 180 families are presently connected to this water supply system. The maximum number of households that can be supplied by the 5-horsepower pump is 200 and the association foresees the need to purchase another water pump in order to service more families.

The association earns approximately P35,000 in monthly revenues from which it earns a net income of P21,000.

**Concrete access road.** The two-kilometer access road was cemented through the collaboration of the community and the local government. In order to persuade the government to cement the road, the local association pushed for the recognition of the access road as a barangay<sup>33</sup> road and executed a donation transferring the ownership of the road to the public domain. In May 2000, the road was finally cemented.

Community residents observed that since the road was cemented businesses flourished along the roadside. Boosting the business condition was that, with the concrete road, residents of other villages (Purok 3, 4, and 6) also now pass through this same access road. Some businesses claimed doubling and tripling of their sales since then. One store, which had a good market share prior to the road cementing, pointed out that competition has increased as well.

Leaders also claimed that they were no longer being harassed by the adjacent private subdivision after their road was cemented. Previously, subdivision residents would refuse entry to vehicles or otherwise would charge toll fees or close the gates altogether. This has created strong animosities between the two communities. This finally subsided after the road was cemented. Passage through the neighbouring subdivision is still necessary up to this day. However, the leaders believed that the road had imbued them with a “newfound” dignity in the eyes of their neighboring subdivision.

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<sup>32</sup> Each cubic meter is equivalent to 5 barrels. Each barrel holds up to 10 containers of water.

<sup>33</sup> Barangay is the smallest political unit, normally encompassing 5,000 individuals in urban centers (and 2,000 individuals in rural areas).

**Solid Waste Disposal**

Since the road was constructed, the municipal garbage collection system came within reach as well. Garbage is now collected once a week. During the days when the garbage truck would not arrive, most residents would burn their garbage.

**Location** : **Daang Manunuso, Tipas, Tagig, Rizal**  
**Name of Association** : **Southeast People's Village Homeowners Association (SEPVHOA)**

### **Location**

Daang Manunuso in Tipas, Tagig, used to be a rice paddy which earned the classification of industrial land due to the presence of a factory next to it, the National Steel Corporation. Makeshift homes began sprouting in 1987 as people, weighed down by rental cost in the city, started establishing dwellings here in the hope that they could eventually purchase the land. In time, the community converted the classification of the 1.7 hectare land from industrial to residential land, carried out landfilling of the paddy, created a water system for the households, and finally purchased the land in 1999 under a community mortgage programme.

Daang Manunuso is located in between two major cities, namely, Makati City and Pasig City, and, in five-years' time, major thoroughfares would be constructed next to it. By then, residents would have quick access to three cities on which it is bounded (including Parañaque City).

The zonal value of the land has increased from P300 per square meter in 1996 to P800-1,200 today. It is expected to further rise in five years' time with the eventual construction of the main thoroughfares.<sup>34</sup>

### **Population**

The population in Daang Manunuso has grown from 80 households in 1987 to 234 in 2001. With a total land area of 1.7 hectares, population density is approximately 73 square meters per household.

Community leaders estimate that the residents are engaged in the following:

- Wage employed – 50% (e.g. sales ladies, security guards, and factory workers)
- Self-employed – 30% of the households (e.g. tricycle and retail operations)
- Housemaids – 10%
- Construction workers – 10% (mostly on a contractual basis)

The average household income is estimated at P5,000.

### **Improvements**

Over the years, several infrastructure improvements have been carried out, mainly through the community's efforts. These are:

- Electricity – 1998
- Water supply – October 2000
- Landfill – 1995-1998

**Electricity.** Electricity was provided in 1998 under the Depressed Areas Electrification Program with the same terms as described above. Prior to the individual power installation at DAEP's more affordable rates, residents would tap into neighbors' lines and would pay for usage per appliance unit. Electricity for a refrigerator would have a monthly rent of P300; television set, P150; lights, P110-150; iron; P250, and others at P100. Those who tap from relatives enjoy special rates; e.g. P30-50 per month. With the power tapping system also come occasional indignities, as some "renters" in Daang Manunuso relate incidents when the "owner" would enter their homes and turn off their TV in order to conserve power.

With electric connection came 25 streetlights which were provided by the local government. The lighting of their surroundings made residents feel more secure. One of the residents, a mechanic, said that prior to the lighting of the street, he could not work late at customer's place since he did not feel safe walking home in his neighborhood.

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<sup>34</sup> The community however locked the purchase price of the land in 1999 at P490.

**Water supply.** The local water supply system was installed by the association and it is connected to the MWSS or NAWASA<sup>35</sup>. Since 1992, the community maintained only a common faucet which was linked to NAWASA. Each family had to queue daily to collect water.

In 2000, the association approached MWSS to facilitate the extension of their pipelines to their community. They also secured the help of the Philippine Business for Social Progress (PBSP) to co-finance the initial capital outlay. Thereafter, MWSS laid the pipes leading to their community and set up a mother meter at the community center. PBSP on their part financed the cistern and a two-horsepower motor as well as the construction of the infrastructure. The community residents volunteered their labour for the construction itself. The water system began operating in October 2000.

The total project cost was a little over P200,000. In addition, each family shelled out P1,550 for individual meters and connections to their homes.

Today, the water system is distributed through a pressurized tank which the community purchased after the first two-horsepower motor donated by PBSP broke. The cost of the pressurized tank was P10,000 and the attached 3-horsepower water pump cost P20,000. These were financed entirely out of community funds: The tank was funded out of association dues and the pump, from a P200 contribution from each member. Recently, the Department of Health donated a water tank which is not yet being used.

Water is being sold by the community at P5 per cubic meter. This translates into P1.25 per barrel or P0.12 per container<sup>36</sup> which, when compared to the previous cost of P0.50, represents a 76 percent reduction in the price of water. Moreover, community members say that they can have generous helpings of water now and do not have to suffer the inconvenience of queuing early in the morning where frequent attempts to jump queue have led to hostility and fights.

In addition to the actual cost of water consumed, the association charges each member P55 as contribution to the cost of maintenance. All in all, the association earns an average revenue of P13,000 monthly from 110 users. Of this, P7,000 is paid to MWSS for actual water consumption, P5,000 for electricity, and P2,000 for two maintenance workers. Given a total cost of P14,000, the association was found to be running on deficit.

Because of this, the leaders plan to ask members to consider an increase in the water rates. A scheme such as the following is presently being considered: P15 for the first 5 cubic meters, P13 for the next 5, and P12 for the last 10 cubic meters.

**Landfill.** The landfilling of the rice paddy from 1995-1998 was carried out and financed entirely by the community. Each family contributed P1,000 for the landfilling and this was supplemented by the association's funds. The association's funds were derived from membership dues of P25 each as well as from the revenues of the water supply operations. The total cost of the landfilling reached P500,000. The height of the landfill was estimated at 5 meters and the area covered was 1.7 hectares (or an approximate volume of 53,500 cubic meters).

Before the landfilling, the community would experience flooding and muddy roads almost throughout the year. Makeshift bridges and walkways were set up during the rainy season and, during flooded days, boats would carry commuting residents to and from the main highway. From 1993 to 1995, the bridges remained in use all throughout the year.

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<sup>35</sup> National Waterworks and Sewerage Authority (which was later abolished upon the creation of MWSS)

<sup>36</sup> It is estimated that each cubic meter is equivalent to 4 barrels or 40 containers. Thus, each container costs P0.12.

After the landfilling, residents who operated consumer stores reported increased sales. They said that buyers were no longer prevented from seeking out the stores which offered the better prices or their preferred products. Previously, they would simply purchase goods from nearby stores or wherever the bridges would take them.

### **Solid Waste Disposal**

Since the roads in Daang Manunuso are not yet cemented, garbage trucks still cannot collect the solid waste in the community. Residents dump their garbage on the road in a nearby barangay, Kalawaan, which is then collected by the garbage truck. Others burn their household waste. One reported that she brings her garbage to her grandmother's house in Makati City.

## THE NON-UPGRADED COMMUNITIES

The non-upgraded communities were found in Payatas, Quezon City, and in Cupang, Antipolo City. As earlier pointed out, in the absence of baseline information it was difficult to guarantee that the profiles of these two non-upgraded groups were similar to the upgraded communities *prior* to the latter's infrastructure improvement. To ensure some measure of comparability, some respondents were drawn from Cupang which was contiguous to one of the upgraded communities. It was expected that they would share common characteristics except for the infrastructure improvements. As earlier mentioned, the researchers tried to ensure that the former did not enjoy the infrastructure that were developed in the latter.

The situation in these two non-upgraded communities are described briefly below.

### **Location : Payatas, Quezon City**

The entire Payatas has an area of approximately 774 hectares, or roughly 20 percent of Quezon City's total land area. About 700 hectares are being used by residents who have settled in the location since the 1960s and 1970s. Around 174 hectares are used as access and secondary roads, some of which were constructed by the local government as well as by the residents themselves.

Payatas has a population of 100,000, and this represents the number of registered residents. Note however that not all residents are registered with the barangay. The average population growth rate is 15.23 percent, which is much higher than the city's 3.64 percent.

Payatas is made up of several smaller communities each with a population ranging from 500 to 5000 families. This survey covered three such communities; namely, Sandakot, Phase 4 and Group 7. Although exact density is difficult to determine given the absence of data, the density in Payatas is relatively low given the open spaces available in the community. Each household would have an average land area of 80-120 square meters.

The specific communities within Payatas that were selected for this survey were those with no access roads and concrete footpaths. Water is difficult all over Payatas as only few deep wells produce potable water and water is mostly purchased from vendors. Prices ranged from P2.50-P5.00 per container or P25-50 per barrel. All of these communities obtained power connections under the DAEP.

Roughly 60 percent of residents do not have land titles. Rather, most have purchased informal land rights from previous occupants. While many of the working population are wage employed, many women and men run small businesses. Community leaders estimate that the average income in Payatas is P5,000 per household.

Given its proximity to the main highways and commercial centers, the zonal values of the lots within Payatas is around P2,500-P2,800, up from P1,500 five years ago. Payatas thus compares well with the upgraded communities in terms of access to external markets. The expected variation between Payatas and the upgraded communities would be the availability of infrastructure within the settlements. Other variations or similarities will be gleaned from the survey results.

### **Location : Cupang, Antipolo**

The non-upgraded community in Cupang is located within the same community as the upgraded one. It has a total of 68 families and is part of the 2-hectare lot that is being purchased under the Community Mortgage Program. It is separated from the upgraded community by a narrow bridge and

does not enjoy cemented roads and pathways as does the former. The water supply network of the association is not available to them as well. However, it enjoys power connection under DAEP.