SMERU

Working Paper

Jesse Darja

Daniel Suryadarma

Asep Suryahadi

Sudarno Sumarto

The State of Village-Level Infrastructures and Public Services in Indonesia During the Economic Crisis

June 2004

For further information, please contact SMERU, Phone: 62-21-31936336; Fax: 62-21-31930850; E-mail: smeru@smeru.or.id; Web: www.smeru.or.id

The State of Village-Level Infrastructures and Public Services in Indonesia During the Economic Crisis

Jesse Darja
Daniel Suryadarma
Asep Suryahadi
Sudarno Sumarto

The SMERU Research Institute
Jakarta
June 2004

TABLE OF CONTENTS

	Page
Abstract	ii
I. Background	1
II. The Role of Infrastructure in Economic Development	3
a. Types of Infrastructure	3
b. Infrastructure, Economic Growth, and Poverty Reduction	3
III. Village-Level Infrastructure Development in Indonesia	6
a. Past Developments	6
b. Future Challenges	7
IV. Data and Method	8
a. Data: The Village Potential (PODES) Survey	8
b. Method	8
V. Changes in Village-Level Infrastructure and Public Services	10
a. Education	10
b. Health	12
c. Utilities	14
d. Transportation	16
e. Business Institutions	17
VI. Conclusion	20
References	21

The State of Village-Level Infrastructures and Public Services in Indonesia During the Economic Crisis

Jesse Darja, Daniel Suryadarma, Asep Suryahadi, Sudarno Sumarto[*]

Abstract

Infrastructures play a crucial role in economic development and poverty reduction. The economic crisis in 1997-98 severely curtailed the government's capacity to maintain existing infrastructures, negativelyimpacted the prospects for future economic development and poverty reduction in the country. This study provides an overview of the changes in the availability of village-level infrastructures and public services during the economic crisis. The findings indicate that there were mixed trends in the availability of different types of infrastructures and public services. Furthermore, the changes in the availability of certain infrastructures or public services differ across urban and rural areas as well as between Java-Bali and the outer islands. In the era of regional autonomy, it is essential to involve regional governments in infrastructure development planning, management, and maintenance.

[*] We would like to thank Wenefrida Widyanti for research assistance and Statistics Indonesia (BPS) for access to data.

I. Background

The 1997-98 economic crisis brought Indonesia to its worst economic recession since the 1960s. The *rupiah* began a free fall from Rp 3,000 against the US dollar in August 1997 to around Rp 15,000 in June 1998. This large depreciation in the value of the *rupiah* induced domestic prices to jump. In September 1998, the food component of consumer price index (CPI) reached 261 relative to 100 in January 1997, while the CPIs for housing, clothing, and health CPIs reached 156, 225, and 204 respectively.[1]

Although the crisis started as a crisis in the financial and banking sector, it quickly spilled over to the real sector. As a result, the real Gross Domestic Product (GDP) dropped by almost 14 percent in 1998 and remained stagnant in 1999.[2] Private investment was heavily affected by the downturn as the real Gross Domestic Fixed Investment fell by 36 percent in 1998.

Since nominal wages rose more slowly than food prices during this period, real income declined. The impact of the crisis on welfare is reflected by the increase in poverty rate from around 15 percent in the second half of 1997 to 33 percent by the end of 1998.[3] Entering 1999, along with the stabilization in the economy, the poverty rate appears to have reduced considerably since then.

The economic crisis has produced diverse effects on different groups and regions in Indonesia. A study found that the crisis impacted urban households worse than rural ones, which is hardly surprising given the origins of the crisis in the financial and banking sector.[4] A separate study confirmed that the urban poor appear the most adversely impacted by the crisis.[5] The poor in urban areas were the least able to cope with the increase in the cost-of-living due to the increase in prices. In rural areas, some farmers, particularly large-scale farmers, may have profited from the increase in agricultural food prices. However, there was a serious rural crisis, particularly in eastern Indonesia, as a result of a major El-Nino drought which decreased crop yields substantially in 1997.

In order to obtain an indication of the overall impact of the crisis, another study used the results from a nation-wide *Kecamatan* (sub-district) survey filled by three expert respondents (agricultural officer, school supervisor, and health officer) at each of the 4,025 *Kecamatan* in Indonesia.[6] The study found that the impact of the crisis is heterogeneous in nature with some regions experiencing severe difficulties and others doing relatively well. In particular, Java has been hard hit by the crisis, while large parts of Sumatra, Sulawesi, and Maluku have experienced minimum negative crisis impact. Moreover, the study found little connection between the initial poverty levels and the extent to which an area has been hit by the crisis. Some relatively poor areas have not

[1] Levinsohn *et al.* (1999).

[2] Strauss *et al.* (2002).

[3] Suryahadi *et al.* (2003).

[4] Poppele *et al.* (1998).

[5] Levinsohn *et al.* (1999).

[6] Wetterberg *et al.* (1999).

been hard hit (e.g. Maluku), while other relatively well-off areas have been hit hard by the crisis (e.g. Jakarta).

Despite the importance of infrastructures and public services in economic development and poverty reduction, there is a relatively lack of research on the impact of the crisis on infrastructures and public services. This is unfortunate as a deterioration of the availability or quality of infrastructures and public services may have long term detrimental effects on economic development and, in particular, poverty reduction. This study aims to fill this gap and focuses on village-level infrastructures and public services as their availability and quality often directly affects the welfare of the poor.

The rest of the paper is organized as follows. Chapter two provides a review on the role of infrastructure in economic development in general. Chapter three discusses the development of infrastructures and public services in Indonesiaat the village-level. Chapter four explains the data that is used in the analysis. Chapter five discusses the empirical findings on the changes in village-level infrastructures and public services before and after the economic crisis. Finally, chapter six provides the conclusion of this study.

II. The Role of Infrastructure in Economic Development

Infrastructures play a crucial role in economic development and poverty reduction. Lack of access to infrastructures is often identified as a major cause of poverty. Isolated areas are much more likely to become poor areas than areas which are accessible. Likewise, standard of living differentials across regions are often associated with inequality in access to infrastructures.

a. Types of Infrastructure

In economics, infrastructure traditionally refers to tangible assets that often combine characteristics such as economies of scale and externalities.[7] In practice, infrastructures are often referred to as physical structures that form the foundation of development. Infrastructures make it possible for people to increase productivity and improve welfare. In general, infrastructure can be divided into two main different types: economic and social infrastructure.

Economic infrastructures are structures that support economic activities in an area. Examples of this type of infrastructure include roads, irrigation networks, electricity, and communication facilities. Since economic backwardness and poverty are often caused by remoteness and isolation, roads have a crucial role for economic development and poverty reduction in an area. Similarly, communication facilities have a role in reducing the disadvantages of location and distance. Meanwhile, electrification enables people to use a relatively safe source of energy to go about their daily activities. Electrification also opens up new horizons for people in remote places as they can now see what is outside their world through television, radio and eventually the internet.

Social infrastructures are facilities that empower people in an area to increase their welfare and productivity. The two most important social infrastructures are education and health facilities. Improved access to these social infrastructures increase the quality of human resources. People can improve knowledge and develop skills through better education, which are essential for productivity and welfare improvements. Likewise, better health status is essential for sustaining the improvements in productivity and welfare.

b. Infrastructure, Economic Growth, and Poverty Reduction

The availability of infrastructure can provide a stimulus for the economy and a platform for economic expansion. Hence, differing levels of access to infrastructure across regions in a country is a significant explanatory variable in regional per capita income divergence.[8] An improvement in the transport infrastructure leads to lower interaction costs, which can have three major effects: (i) the access of economic agents increases and likewise the accessibility of locations increases; (ii) productivity of firms and households increases because of the decrease in interaction costs; and (iii) both of the things above will increase the volume and location of activities of firms and households.[9]

[7] van der Linden (2001).

[8] Alexander and Estache (1999).

[9] Bruinsma (1995).

A study on the role of infrastructure in India found that the mix between infrastructure and total government spending could significantly affect the long-run growth rate.[10] Furthermore, the findings of another study showed that low and middle-income countries that use infrastructure inefficiently pay a growth penalty in the form of a much smaller benefit from infrastructure investments.[11] The study also found that international aid programs aimed only at new infrastructure constructions may have a limited impact on economic growth. In fact, if the constructions divert resources away from the maintenance of existing infrastructures then the new infrastructures may actually be detrimental to the economy.

The unavailability of infrastructure is often perceived as one of the main causes of poverty. Development of infrastructures and public services could potentially contribute to economic growth by raising workers' productivity and creating jobs, which is why access to adequate infrastructure is necessary in order to eradicate poverty. Since poverty is often associated with low educational attainment and bad health status, improving people's access to education and health infrastructures constitutes the most effective way to reduce poverty in the long run.

The United Kingdom's Department for International Development succinctly summarized the poor's need for infrastructure (DFID, 1998). They explained that basic infrastructure includes the provision of adequate water, sanitation (including human and solid waste disposal and drainage), clean and efficient energy, adequate and secure shelter and public buildings, plus the essential information that enables people to utilize these services effectively. In addition, access is required for services available on a less local basis and mobility through safe, affordable transport (including roads, tracks, and means of transport), which will enable the poor to participate in the economic, cultural, and political institutions of society. Therefore, basic infrastructure provision relates to facilities that directly impact on the sustainable livelihoods and opportunities of poor people within their communities.[12]

In addition, DFID (1998) also stated that increase in spending on basic infrastructure is insufficient because it has to be ensured that the development of infrastructure benefits the poor more than the rich. In the long term, the maintenance and operation of the infrastructure must be developed locally to be sustainable. Moreover, the World Bank stated that equality in access to infrastructure services is important to improve the value of poor people's assets. The World Bank also views that infrastructures create opportunities, facilitate empowerment, and reduce risk and vulnerability at household and community levels.[13]

[10] Levine and Krichel (1994).

[11] Hulten (1996).

[12] DFID (1998).

[13] World Bank (2001).

Other studies have found that good governments that invest on essential public services realize high rates of return. Easterly estimated that each additional percentage point of GDP in transport and communication investment increases growth by 0.6 percentage point.[14] The 1997 World Development Report by the World Bank stated that the rate of return to infrastructure projects, such as irrigation and drainage, telecommunications, airports, highways, seaports, railways, electric power, water supply, sanitation, and sewerage averages 16 to 18 percent per year.[15] Another study also found that returns to maintenance spending on existing infrastructure, such as on roads, are even higher.[16]

The United Nations Development Program (UNDP) in its first Human Development Report in 1990 wrote that the basic objective of development is to create an enabling environment for people to enjoy long, healthy, and creative lives.[17] This means that at its very core, the purpose of infrastructure boils down to one thing: to increase the quality of living.

[14] Easterly (2001).

[15] World Bank (1997).

[16] Gyamfi (1992).

[17] UNDP (1990).

III. Village-Level Infrastructure Development in Indonesia

a. Past Developments

The technocratic economic team behind the Indonesian New Order government acknowleged the importance of infrastructure development on economic development in general. Starting in the 1970s up to the 1980s, the government of Indonesia emphasized infrastructure constructions and rural development as priorities in its development program. Several major projects were undertaken during this period andhave changed the availability of village-level infrastructures and public services to a large extent.

One of the first such massive projects was the SD Inpres project.[18] It was launched in 1973 with the aim of providing equal access to primary-level education to all Indonesian school-age children. To achieve this objective, the project built more schools in places where there had been relatively less school prior to 1973. Specifically, the number of schools constructed in each district in 1973-1975 was proportional to the number of primary school age children not enrolled in school in 1972. It was the largest infrastructure project at the time it was launched, absorbing 12 percent of the regional development budget in 1973 and increasingsteadily to reach 28 percent in 1979.[19] Between 1973 and 1979, 61,807 new primary school buildings were constructed, which represented about 222 new schools and 666 new teachers per district. This project had roughly doubled the number of primary schools in Indonesia.[20]

The second massive infrastructure program was the construction of Puskesmas (public health center). Although relatively small compared to the budget allocated for the SD Inpres program, by the virtue of this program there have been significant improvements in the availability and access to primary health centers in the regions all over the country.[21] The number of hospital beds increased from 63,643 in 1973 to 123,168 in 1998, while the number of Puskesmas increased from 3,735 in 1974 to 7,602 in 1998.[22]

The third major undertaking by the government since the 1970s was the massive national program for rice self-sufficiency. One of the most expensive components of this effort is the expansion of irrigation network in cultivated lands. Over the period between 1970 and 1984, total irrigated land area increased from 3.7 to 4.9 million hectares, which was subsidized at the cost of US$440 million in 1989.[23]

[18] SD INPRES literally means Presidential Instruction on Primary Schools. See Duflo (2000) for analysis on the impact of this program on the labor market.

[19] The regional development itself was 15 percent of the total budget by 1979.

[20] See Duflo (2000) for discussions on this program.

[21] Duflo (2000) stated that health expenditures were only 3.4 percent of the budget for regional development in 1973 and 5.5 percent in 1979.

[22] WHO (2002).

[23] Small (no date).

b. Future Challenges

In 1996, a report by the Economic and Social Commission of Asia and the Pacific of the United Nations (UNESCAP) expected investments in power, transport, telecommunications, and water infrastructures in Indonesia to total over US$53 billion, of which at least $18 billion will be undertaken by the private sector.[24] But the UNESCAP's projections did not materialize because of the advent of the economic crisis in 1997. In 1998, the growth in infrastructure grounded to a halt. Transportation and communication output in that year contracted by 36.44 percent and 15.13 percent respectively, although the outputs of electricity, gas, and clean water still grew a little by 3.03 percent. Meanwhile, conditions of roads deteriorated due to the lack of maintenance fund.[25]

Apart from the crisis, infrastructure in Indonesia is also faced with the problems associated with decentralization due to the regional autonomy policy adopted starting in 2001. To some degree, regional autonomy shifted the responsibility of providing infrastructures to the regional governments, which are relatively inexperienced and lacking adequate resources to even maintain the available infrastructure. Consequently, the central government's role is reduced from a budget-allocating role to policy-making role.[26]

The new policies of investment liberalization presents a different set of challenges. Indonesian telecommunication and transportation companies will now have to compete directly with foreign companies for provision of services. The drinking water service in Jakarta is already operated by a foreign-government joint company. Theoretically, this is beneficial to the public because they will enjoy the best service available. However, there could also detrimental effects such as higher prices that have to paid by the public for these services.

Currently, infrastructure in Indonesia is in dire condition. According to a report released by the World Bank in 2003, Indonesia is lagging behind in almost all infrastructure sectors thus threatening Indonesia's long-term growth.[27] The report mentioned that only 1.3 percent of the population has access to network sewerage, the lowest percentage in Asia. Furthermore, only roughly half have access to electricity and only 9.1 per 100 people in Indonesia own a telephone connection. Only 34 percent of the urban population (or 14 percent of the total population) are served directly by water utilities. In addition, Indonesia's urban centers are clogged with traffic jams due to inadequate public transportation system, unclear regulations, and horrendous road quality; and this condition is taking its toll on the economy. The last issue that the report mentions is that things will continue to get worse for Indonesia if corruption continues to be rampant.

[24] UNESCAP (1996).

[25] KKPPI (2003a).

[26] KKPPI (2003b).

[27] World Bank (2003).

IV. Data and Method

a. Data: The Village Potential (PODES) Survey

This study uses the pre-crisis (1996) and post-crisis (1999) PODES (*Potensi Desa*, or Village Potential) data to evaluate the impact of the 1997-98 economic crisis on village-level infrastructures and public services. PODES is a census of villages, collecting various village level data, ranging from geographic to demographic data, and also including data on infrastructures and public services (roads, utilities, markets, health centers, and schools) available in each village. The village census is carried out by BPS (*Badan Pusat Statistik*, the government's statistical agency), usually prior to and used as a preparation for a population, agricultural, or economic census.

b. Method

In this study, the term "village" refers to the smallest government administrative area.[28] The term is used uniformly in referring to such units in both urban and rural areas.[29] There are 66,484 and 68,783 villages covered in the 1996 and 1999 PODES respectively. The change in number of villages was due to administrative restructuring of villages, involving both splitting up and merging of villages. In addition, data for some villages in conflict areas could not be collected in 1999. Since the changes in infrastructures available within a village could be due to the restructuring, only those villages that did not undergo administrative change and whose data is available in both census years are included in the analysis. Taking the restructuring effect into account, the total number of villages used for analysis is 48,400 or 73 percent of the total number of villages in 1996.

The variables used for the analysis relate to key public infrastructures and services within the villages. In total, there are 27 variables of infrastructures and public services that are analyzed, which are grouped into five categories:

1. *Education*. This category includes six variables: the availability of public and private primary, junior secondary, and senior secondary schools.

2. *Health*. This category consists of six variables: the number of healthcare providers (hospitals, community health centers, drug stores) and the availability of health personnel practices (doctors, paramedics, midwives).

3. *Public Utility*. This category consists of seven variables: the availability of gas/kerosene for cooking fuel, drinking water from improved sources, trash disposal service, percentages of households served by electricity and telephone services, and the availability of public postal service and public telephones.

4. *Transportation*. This category consists of three variables: road surface condition in general (asphalt or non-asphalt), road accessibility to motorized vehicles, and the availability of public motorized transportation.

[28] In Indonesia, governments administrative units covering the largest to smallest areas are the central, provincial, district (*kabupaten/kota*), subdistrict (*kecamatan*), village governments.
[29] A village located in urban areas is referred to as a *kelurahan*, while a village in rural areas is referred to as a *desa*.

5. *Business Institution*. This category has five variables: the availability of shopping complexes and permanent markets, and the availability of banks (public and BPR) and cooperatives.

The analysis focuses on the changes in the availability of these infrastructures and public services within the villages. In addition to assessing the total availability, the changes in the availability are also disaggregated by urban and rural areas as well as by Java-Bali and the outer islands.

V. Changes in Village Infrastructure and Public Services

a. Education

Most schools in Indonesia, particularly at the primary level, are public schools. Previously they were administered by the central government's Department of National Education, but now they are administered by local governments in accordance with the regional autonomy policy since 2001. In addition to these regular public schools, there are also Islamic schools (*madrasah*), which are administered by the central government's Department of Religious Affairs. Alongside these public schools and *madrasah*, there exist private schools and *madrasah*, which are established and managed by private foundations.
Even prior to the crisis, the quality of basic education in Indonesia in general was unsatisfactory with schools operating on tight budgets, and thus unable to provide sufficient teaching supporting materials, facilities, and pay the teachers accordingly. A much smaller negative economic shock in 1986/87 caused gross enrolment rates to fall from 62 percent to 52 percent at the junior secondary level, primarily due to poor children dropping out of schools.[30]

With an already weak education system, the 1997 economic crisis further exacerbated the situation. The combination of reduced public funding for education, higher prices of schooling, and lower family incomes resulted in an increased dropout rate, particularly among the urban poor. In the aftermath of the economic crisis, the budget allocation for education dropped from around 7 percent of GDP to approximately 5 percent as priorities shifted elsewhere, forcing the postponement of the targets of the government's nine-year compulsory education program that started in 1994.[31]

As a result of the budget reallocation, many educational projects, such as the construction of school buildings, were suspended. This has been somewhat remedied with the new National Education System law ratified in 2003 that requires education budget to be at least 20 percent of GDP in the hope of catching up and making up for all the setbacks suffered by the education sector during the crisis. In reality, however, the implementation of this law is still lacking as the education budget is still way below the mandate stipulated in the law.

The data of school availability at the village level for public and private schools before and after the economic crisis are summarized in Table 1 and Table 2 respectively. In total, there is a general tendency for the proportion of villages with schools to remain relatively unchanged between 1996 and 1999, except for the private primary schools, which have declined, and public junior secondary schools, which have tended to increase. However, the trends differ between urban and rural areas, where in rural areas there was a tendency for school availability to expand, while in urban areas fewer villages have schools after the crisis.

[30] World Bank (2002a).

[31] PHPCR (2002).

Table 1: Proportion of villages with public schools by region (%)

	SD			SMP			SMU		
	1996	1999	Δ	1996	1999	Δ	1996	1999	Δ
Total	87.5	87.8	0.3	14.6	16.5	1.9	5.1	5.6	0.5
Urban	92.4	91.9	-0.5	34.7	35.3	0.5	21.2	20.6	-0.6
Rural	86.7	87.2	0.4	11.7	13.8	2.1	2.7	3.4	0.7
Urban Java-Bali	96.5	96.1	-0.4	34.7	35.5	0.8	20.3	19.9	-0.4
Urban off-Java-Bali	84.6	83.7	-0.8	34.8	34.9	0.1	23.0	22.2	-0.9
Rural Java-Bali	98.6	98.4	-0.2	12.3	14.5	2.2	2.4	3.1	0.7
Rural off-Java-Bali	77.2	78.1	0.9	11.2	13.3	2.1	3.0	3.7	0.6
Notes: SD = primary school, SMP = junior secondary school, SMU = senior secondary school.									

Table 2: Proportion of villages with private schools by region (%)

	SD			SMP			SMU		
	1996	1999	Δ	1996	1999	Δ	1996	1999	Δ
Total	34.9	31.2	-3.7	20.2	20.5	0.3	10.0	10.3	0.3
Urban	53.6	51.5	-2.0	52.4	52.2	-0.3	43.0	43.2	0.2
Rural	32.2	28.3	-3.9	15.6	15.9	0.3	5.3	5.6	0.3
Urban Java-Bali	57.7	55.2	-2.4	56.1	55.7	-0.5	44.2	44.9	0.7
Urban off-Java-Bali	45.6	44.4	-1.2	45.2	45.4	0.1	40.6	39.7	-0.9
Rural Java-Bali	45.1	39.8	-5.3	20.0	21.2	1.2	6.5	7.1	0.6
Rural off-Java-Bali	21.9	19.1	-2.8	12.0	11.6	-0.4	4.3	4.4	0.1
Notes: SD = primary school, SMP = junior secondary school, SMU = senior secondary school.									

In the case of primary schools (SD), all regions experienced a decrease in school availability, except for public primary schools in rural areas off-Java-Bali. Public junior secondary schools (SMP) appear to have increased in all regions, although the increase is much higher in rural areas. The availability of private SMP, however, declined in urban Java-Bali and rural off-Java-Bali. For senior secondary schools (SMU), urban areas again experienced a decline in the availability of public SMU. Furthermore, in urban areas off-Java-Bali, the availability of private SMU also declined.

A survey by the World Bank found a marked shift of enrollment from private to public schools during the crisis.[32] The shift is due to the fact that private schools in general charge higher fees than public schools and that the government has just completed a building program that expanded the number of schools in rural areas. The shift from private to public schools might explain the percentage decline in private primary schools availability between 1996 and 1999.

The increase in the number of public schools in rural areas is also reflected by the increase in the percentages of villages with public SMP. The World Bank survey reported that in 1998, public junior high enrolments increased by 2.1 percent while private junior high

[32] Filmer and Sayed (1999).

enrolments decreased by 10 percent. In the case of primary schools, public enrolments decreased by 1.1 percent, while private enrolments decreased by 4.4 percent.

b. Health

Similar to the case with schools, many health facilities in Indonesia are publicly owned and funded. Basically there are three types of health facilities for which the data is available in PODES: hospitals, which provide extensive health services and are only available in urban centers; *puskesmas* (primary health center), which provide relatively less comprehensive services beyond basic services and immunization but scattered in more places all over the country; and drugstores/pharmacies.

In the three decades prior to the crisis, Indonesia had achieved significant progress in healthcare. Infant mortality rate (IMR) declined from 124 per 1000 live births in 1967 to 41.4 per 1000 live births in 1997, mainly due to an increase in the general welfare of the population over the period and continuous efforts by the government to increase access to health services.[33]

However, despite the relative improvements, the standards of health services in Indonesia remain low compared to neighboring countries. There is a shortage of medical and paramedical personnel, particularly in rural areas that are isolated and inaccessible. The collapse of the *rupiah* in the 1997 crisis sharply increased the prices of pharmaceuticals (including vaccines and contraceptives), of which an estimated 60 to 80 percent are imported.

Table 3 summarizes the change in the availability of the three types of health facilities between 1996 and 1999, while Table 4 records the change in proportion of villages which have health personnel practices in the same time period. The table shows that hospitals are generally located in urban areas. In total, hospital availability was relatively stable. However, there was a decrease in hospital availability in urban Java-Bali and a slight increase in the outer islands. For *puskesmas*, there was generally an increase in its availability, with a higher increase occurred in rural areas, especially in off-Java-Bali areas. Meanwhile, the presence of pharmacies, which is also generally an urban phenomenon, significantly jumped in urban areas, especially in Java-Bali. There seems a large gap between the increase in Java-Bali areas and off-Java-Bali areas. Overall, pharmacies experienced the highest increase compared to the other two health facilities.

[25] World Bank (2002b).

Table 3: Proportion of villages with health facilities/services by region (%)

	Hospital			*Puskesmas*			Drug Store/ Pharmacy		
	1996	1999	Δ	1996	1999	Δ	1996	1999	Δ
Total	2.7	2.6	-0.1	34.4	39.1	4.7	7.1	12.1	5.0
Urban	17.3	16.8	-0.6	49.5	52.4	2.9	41.2	54.4	13.2
Rural	0.6	0.6	-0.1	32.2	37.2	5.0	2.2	6.1	3.9
Urban Java-Bali	16.5	15.4	-1.2	50.6	53.6	3.0	41.2	59.3	18.1
Urban off-Java-Bali	19.0	19.5	0.5	47.4	50.0	2.5	41.2	45.0	3.8
Rural Java-Bali	0.6	0.5	-0.1	31.3	35.5	4.2	2.7	10.4	7.7
Rural off-Java-Bali	0.6	0.6	0.0	32.9	38.6	5.7	1.8	2.6	0.8
Hospitals include regular hospitals and maternal hospitals. *Puskesmas* is Primary Health Center.									

However, Table 4 shows that the availability of doctor tended to increase in all areas, except for urban off-Java-Bali areas. In the case of paramedics, there was a decline in their availability, which occurred mostly in rural areas. Meanwhile, urban off-Java-Bali was the only areas where there was a tendency of an increase in availability of paramedics. On the other hand, almost all areas saw an increase in the availability of midwives, particularly in rural areas, with the highest increase occurred in rural off-Java-Bali. Overall, rural areas experienced more than twice the increase that took place in urban areas.

Table 4: Proportion of villages with health personnel by region (%)

	Doctors			Paramedics			Midwives		
	1996	1999	Δ	1996	1999	Δ	1996	1999	Δ
Total	15.6	16.1	0.5	44.7	43.1	-1.6	67.0	82.0	15.0
Urban	65.3	66.2	0.9	79.0	78.8	-0.2	81.6	88.9	7.3
Rural	8.4	8.9	0.4	39.8	38.0	-1.8	64.9	81.0	16.1
Urban Java-Bali	65.2	66.9	1.7	76.5	76.0	-0.5	82.2	90.1	7.9
Urban off-Java-Bali	65.3	64.9	-0.4	83.7	84.1	0.4	80.6	86.7	6.1
Rural Java-Bali	10.6	11.3	0.7	44.3	42.1	-2.2	76.9	86.1	9.2
Rural off-Java-Bali	6.7	6.9	0.2	36.2	34.6	-1.6	55.3	76.9	21.6

Small surveys conducted by the World Bank indicated that drug prices increased by 200 to 300 percent between November 1997 and March 1998.[34] The price hike has caused drug shortages, which forced some health centers to close. Pregnant women may also turn to traditional midwives (*dukun bayi*) when delivering at home.

In an effort to increase access to quality health care for women in rural villages, the government sent over 54,000 midwives to villages throughout Indonesia between 1990 and 1996. The trend seemed to continue to 1999 as shown by the increase in percentage of villages with trained midwives. On the other hand, the fact that paramedics availability decreased in rural off-Java-Bali areas and increased in urban off-Java-Bali areas might

[34] World Bank (2002b).

indicate that paramedics might have moved to urban areas where people are generally wealthier and can afford to pay them better.

As the crisis developed, it had been predicted that there would be a shift from private health facilities to the subsidized public sector. Instead, the overall use of both public and private health facilities fell steadily and was replaced by higher rates of self-treatment.[35] A decline of about 2 percent was observed in the use of public health by adults between 1997 and 1999, and the use of child healthcare declined by 6 percent over the same period. Both urban and rural areas saw a decrease in the use of health facilities. Greater reliance on self-medication might account for the increase in percentages of villages with drug stores/pharmacies over the 1996-1999 period as indicated in Table 4.

c. Utilities

The government used to supply most of the utilities through its state-owned enterprises before privatizing and agreeing to jointly operate some of the utilities services to private firms in the 1990s. The demand for energy and telecommunication in Indonesia has been increasing in recent decades due to expansion in economic activities and population growth. The economic crisis slightly decreased final energy consumption in Indonesia from 55,700 ktoe in 1997 to 55,200 ktoe in 1998.[36] On the other hand, the crisis also caused a sharp decline in the rate of growth of electricity demand from 13.2 percent in 1996/1997 to 1.4 percent in 1997/1998,[37] which implied that people switched from electricity-based source of energy to other sources of energy, such as biomass fuel.

Furthermore, the need for adequate water supply and sanitation has plagued many Indonesian cities even prior the crisis. In Jakarta, only 20 percent of total households have access to clean water.[38] Lacking access to clean water, poor (and some non-poor) communities in Jakarta resorted to buying clean water from informal water providers at higher than official rates. According to the World Bank, around 75 to 77 million people in Indonesia lack access to safe drinking water before the crisis.[39]

Also, lack of adequate sanitation, such as waste disposal service, has plagued many large cities in Indonesia. Untreated waste is usually thrown into the sewers, rivers, or canals, thus exacerbating future floods. The recent economic crisis resulted in decline of the government's capacity to expand, rehabilitate, and maintain public services as well as infrastructures in urban areas. With an already inadequate infrastructure and public services to serve the growing urban population, the decline in government's capacity to maintain existing infrastructures further degrades the environment.

[35] Otto (1999).

[36] APERC (2002).

[37] Widiono (2000).

[38] URDI (2000).

[39] World Bank (1997).

According to a report by the International Telecommunication Union, network development is slowing down in the post-1997 period.[40] Fixed telephone subscriber growth in South East Asia, including Indonesia, dropped sharply after 1997, averaging just 8 percent a year between 1997 and 2000 compared to 19.5 percent between 1991 and 1997. In addition, the decline in the value of the *rupiah* also raises postal charges due to the increase in costs incurred by shipping and other third parties.

Table 5 shows the proportion of villages that have access to Gas/LPG/kerosene for cooking fuel, improved water sources, and trash disposal service. Table 6 provides information regarding the proportion of villages with access to electricity and fixed telephone lines. Lastly, Table 7 shows the proportion of villages that have public communication services, such as public telephones and postal services, available.

As can be seen from Table 5, access to Gas/LPG/kerosene increased in total between 1996 and 1999. Urban areas experienced higher increase in access than rural areas, while Java-Bali villages experienced slightly higher increase than villages off-Java-Bali. In contrast, access to improved water sources slightly declined in urban areas and rural Java-Bali. For trash disposal service, in total there was a slight decrease in access to the service with a significant decrease in urban areas. There were no significant differences between changes in Java-Bali and off-Java-Bali areas.

Table 5: Proportion of villages with majority households having access to utilities by region (%)

	Gas/LPG/kerosene as cooking fuel			Improved water sources for drinking			Trash disposal service		
	1996	1999	Δ	1996	1999	Δ	1996	1999	Δ
Total	16.1	21.9	5.8	72.1	72.0	-0.1	9.6	8.9	-0.6
Urban	75.4	82.4	7.0	96.8	95.7	-1.1	55.0	52.5	-2.5
Rural	7.6	13.3	5.6	68.6	68.6	0.0	3.1	2.7	-0.4
Urban Java-Bali	73.2	80.3	7.1	97.8	96.8	-1.1	50.5	48.1	-2.5
Urban off-Java-Bali	79.6	86.5	6.9	94.9	93.8	-1.1	63.7	60.9	-2.7
Rural Java-Bali	12.7	19.6	6.9	75.2	74.8	-0.4	3.2	2.8	-0.3
Rural off-Java-Bali	3.5	8.1	4.6	63.3	63.7	0.4	3.0	2.6	-0.4
Improved water sources include piped water, mineral water, and water from pumps or protected wells.									

Table 6 shows a large increase in the total percentage of households with access to electricity, especially in rural areas. In general, rural areas — led by rural Java-Bali areas — experienced more than double the percentage point increase than urban areas. When compared between islands, the increase in Java-Bali villages' access to electricity is about twice the increase that villages in off-Java-Bali experienced. This fact might be related to the phenomenon that when a household had an opportunity to connect to the electricity network, the vast majority did so regardless of their income level.[41]

[40] ITU (2001).

[41] Komives, Whittington, and Xun (2001).

Table 6: Proportion of households with access to selected utilities by region (%)

	Electricity			Fixed telephones		
	1996	1999	Δ	1996	1999	Δ
Total	44.6	60.0	15.4	1.6	2.9	1.3
Urban	80.9	88.2	7.3	10.3	16.3	6.0
Rural	39.4	56.0	16.6	0.4	1.0	0.6
Urban Java-Bali	79.3	88.1	8.8	9.1	15.7	6.6
Urban off-Java-Bali	83.9	88.4	4.5	12.7	17.6	4.9
Rural Java-Bali	47.0	69.3	22.3	0.4	1.4	1.0
Rural off-Java-Bali	33.3	45.3	12.0	0.4	0.7	0.3
Electricity includes state (PLN) and privately provided						

In general, access to personal fixed phones rose in both urban and rural areas, although much higher in urban areas. Except for a small increase rural Java-Bali, most rural areas did not see much change in access to fixed phones. This implies that the development of private fixed telephone lines in Indonesia is still very much urban biased.

Table 7: Proportion of villages with public communication services by region (%)

	Public telephones			Postal service		
	1996	1999	Δ	1996	1999	Δ
Total	13.8	23.0	9.2	26.1	27.5	1.4
Urban	71.9	83.3	11.4	53.1	52.56	-0.5
Rural	5.5	14.3	8.8	22.3	24.0	1.7
Urban Java-Bali	73.1	87.1	14.0	55.1	55.3	0.2
Urban off-Java-Bali	69.5	76.0	6.6	49.2	47.3	-1.9
Rural Java-Bali	9.3	26.6	17.3	28.4	31.5	3.2
Rural off-Java-Bali	2.4	4.4	2.0	17.4	17.8	0.5
Public phones include coin and card operated phones, and telephone kiosk. Public postal services include post office and mobile postal service.						

Meanwhile, Table 7 shows that in contrast to the relatively small increase in access to fixed telephone lines, access to public phones grew much higher, particularly in Java-Bali. Compared to off-Java-Bali, urban areas in Java-Bali experienced more than twice the percentage point increase, while rural Java-Bali experienced almost nine times the percentage point increase in rural off-Java-Bali. Moreover, access to the state-owned postal services appears to have slightly expanded in most areas, with rural Java-Bali the highest, except in urban off-Java-Bali, where it declined. This caused the total urban access to decline slightly while the total change was positive.

d. Transportation

In Indonesia, there are several governmental agencies that are assigned to administer transportation-related infrastructure: Ministry of Transportation of the central government, which designs transportation regulations, maintains road signs and signals, and oversees commercial vehicles; Ministry of Housing and Infrastructure of the central

government, which maintains the quality of roads, bridges, and streetlights with the help of the Department of Public Works of the local governments; and the Police Department, which guards safety on the roads and oversees passenger vehicles. Officially there are no private firms involved, except when the agencies subcontract their duties to private contractors in building an infrastructure.

Similar to some public utility services, the construction and maintenance of roads in Indonesia was hampered during the crisis. Lack of road maintenance is indicated by the slight decrease in percentage of asphalt roads in urban areas. Table 8 shows data on the quality of transportation infrastructures.

The table shows that there was a small net decline in percentage of villages with asphalt roads, which suggest a deterioration of asphalt roads in some areas. In contrast, however, all areas saw improvements in road accessibility to cars and motorized public transport, although the increases happened mostly in rural areas, while urban areas were relatively unchanged. The mode of public transportation also changed in rural areas as a result of better accessibility with motorized public transportation modes experienced an overall 3.5 percentage point increase.

Table 8: Proportion of villages having relatively good transport infrastructure by region (%)

	Majority of roads are asphalt sealed roads			Majority of roads are accessible to cars			Main public transport is motorized		
	1996	1999	Δ	1996	1999	Δ	1996	1999	Δ
Total	60.7	59.4	-1.3	91.1	94.5	3.5	91.2	94.3	3.1
Urban	93.5	92.1	-1.4	99.5	99.8	0.2	97.7	98.0	0.3
Rural	55.6	54.4	-1.3	89.8	93.8	4.0	90.2	93.8	3.5
Urban Java-Bali	93.0	92.1	-1.0	99.7	99.9	0.2	97.8	98.1	0.2
Urban off-Java-Bali	94.4	92.3	-2.2	99.1	99.5	0.4	97.5	98.0	0.4
Rural Java-Bali	58.6	55.9	-2.7	95.0	98.1	3.1	93.4	95.5	2.1
Rural off-Java-Bali	53.0	52.9	-0.1	85.0	89.8	4.8	87.7	92.4	4.7

e. Business Institutions

Prior to the financial crisis, several formal financial institutions have been successful in extending their services to the countryside. The most notable is the state-owned Bank Rakyat Indonesia (BRI), which has succeeded through its *unit desa* (village unit) system in providing financial services widely and profitably throughout rural Indonesia.[42] At the other end of the scale are rural banks (*Bank Perkreditan Rakyat* or BPR), which are regulated financial institutions set up with minimum capital requirements. BPRs are authorized by the central banks to provide loans and deposit services but not current account and overdraft services.

[42] McGuire and Conroy (1998).

As part of a reform agreement with the IMF, the government of Indonesia closed a number of ailing commercial banks in 1997. Consequently, the availability of public banks, especially in urban areas, is expected to decline. Table 9 shows the proportion of villages that has permanent market buildings and Table 10 provides information on the villages that has financial institutions.

Table 9: Proportion of villages having permanent market buildings by region (%)

	Shopping Complexes			Permanent Markets		
	1996	1999	Δ	1996	1999	Δ
Total	10.6	12.0	1.4	13.2	15.6	2.4
Urban	48.1	50.6	2.6	35.4	37.2	1.8
Rural	5.3	6.5	1.2	10.1	12.5	2.4
Urban Java-Bali	51.4	53.2	1.8	38.1	39.6	1.5
Urban off-Java-Bali	41.6	45.7	4.1	30.1	32.4	2.3
Rural Java-Bali	6.6	8.3	1.7	12.9	15.0	2.1
Rural off-Java-Bali	4.2	5.0	0.8	7.8	10.5	2.7

Overall, as shown in Table 9, the number of villages with shopping complexes increased, with urban areas experiencingtwice the percentage point increase than rural areas. Upon closer detail, most of the increases were in urban off-Java-Bali areas. Meanwhile, urban and rural Java-Bali areas have similar percentage point increase, while there was only a slight increase in rural off-Java-Bali. For permanent markets, the increases were more even, except for urban Java-Bali areas which have the lowest increase. This reflects the fact that the proportion of villages with permanent markets is already high in urban Java-Bali areas since before the crisis.

Table 10: Percentage of villages having financial institutions by region (%)

	Public Banks			Rural Banks (BPR)			Cooperatives		
	1996	1999	Δ	1996	1999	Δ	1996	1999	Δ
Total	8.1	7.8	-0.3	16.2	11.6	-4.5	28.1	39.1	10.9
Urban	38.9	38.3	-0.5	32.2	30.7	-1.6	66.2	76.9	10.7
Rural	3.7	3.4	-0.3	13.9	8.9	-4.9	22.7	33.7	11.0
Urban Java-Bali	41.2	41.5	0.4	45.7	39.6	-6.1	69.1	79.6	10.6
Urban off-Java-Bali	34.3	32.0	-2.3	6.1	13.4	7.2	60.7	71.7	11.0
Rural Java-Bali	5.6	5.2	-0.4	28.0	18.1	-9.9	26.9	39.3	12.4
Rural off-Java-Bali	2.2	2.0	-0.2	2.4	1.5	-0.9	19.3	29.1	9.8

Table 10 shows that for financial institutions, as expected there was a slight decrease in public banks availability due to bank closures. In addition, urban off-Java-Bali areas experienced the highest decline in bank availability, while urban Java-Bali villages were the only ones that experienced an increase. Similarly, there was a decline in total BPR availability, especially in Java-Bali areas, while urban off-Java-Bali areas experienced a 7.2 percent increase in BPR availability. Furthermore, rural-off-Java-Bali areas only experienced a slight decline.

In January 1998, the Indonesian government guaranteed the deposits of many commercial banks but did not extend the guarantee to BPRs. This caused movement of capital from rural to commercial banks andthreatened the viability of many rural banks. This probably explains the decline in availability of BPRs in some areas.

In contrast, there was an almost 11 percent jump in availability of cooperatives in Indonesia between 1996-1999, with the figure being almost equal for both rural and urban areas. So there was an almost uniform increase in cooperatives in Indonesia. This mushrooming of cooperatives was due to the policy of the then new government to channel funds for farm credits (*Kredit Usaha Tani* or KUT) through cooperatives. This policy was later abandoned due to high default rates.

VII. Conclusion

Infrastructures play a crucial role in economic development and poverty reduction. Indonesia's impressive past records on economic growth and poverty reduction were partly supported by massive infrastructure development programs. The advent of the economic crisis in 1997-98 severely curtailed the government's capacity to maintain the existing infrastructures, let alone build new ones. Hence, there was reasonable concern that infrastructure conditions in Indonesia were deteriorating and would negatively impact the prospects for future economic development and poverty reduction in the country. The analyses in this study present an overview of the changes in the availability of village-level infrastructures and public services during the economic crisis in Indonesia. The main findings are as follows.

First, there were mixed trends in the availability of different types of infrastructures and public services. The total availability of some infrastructures and public services – such as public primary and senior secondary schools, private junior and senior secondary schools, hospitals, doctor practices, water supplies, trash disposal services, and public banks – did not change much during the crisis. However, the total availability of other infrastructures – such as private primary schools, paramedic practices, asphalt sealed roads, and rural banks – showed negative changes or some hints of deterioration. Yet the total availability of some other infrastructures – such as public junior secondary schools, community health centers, drug stores, midwives practices, gas/LPG/kerosene energy sources, electricity, fixed telephone lines, public telephones, postal services, road accessibility to cars, motorized public transportation, shopping complexes, permanent markets, and cooperatives – appeared to be increasing despite of the economic crisis.

Second, the changes in the availability of certain infrastructures or public services differ across urban and rural areas as well as between Java-Bali and the outer islands. For example, school availability in rural areas improved relative to urban areas, except for private primary schools. The decline in the availability of public banks seems to have mostly occurred in urban areas, while rural banks (BPR) declined mostly in rural areas. Meanwhile, the deterioration in hospital availability occurred only in Java-Bali. However, the deterioration in the availability of asphalt sealed roads seemed to have taken place everywhere, both in urban and rural areas as well as in Java-Bali and in the outer islands.
These findings point to a mix trends in the availability of key public infrastructures and public services at the village-level. However, there are two qualifications to the findings of this study, both due to data limitation. First, the study only looks at the availability aspect of the infrastructures and public services in question, while the possibility of deterioration in the quality of those infrastructures and public services due to the crisis cannot be assessed. Second, some infrastructures and public services that are also essential for economic development and welfare of the poor, such as irrigation and agricultural extension services, were not included in the analysis due to data unavailability.

There were some indications of a decline in the government's capacity to build and maintain a number of key infrastructures and public services. In the era of regional autonomy, it is essential for the regional governments to be consulted in any discussion and planning of infrastructure development because they have more in-depth knowledge of their own areas. By being involved in the planning, regional governments can play a bigger role in managing and maintaining infrastructure installations in their areas, which would relieve some burdens from the central government.

REFERENCES

Alexander, I. and A. Estache. 1999. "Infrastructure Restructuring and Regulation - Building a Base for Sustainable Growth." Background Notes on the Presentation on The Role of Regulatory Reform and Growth: Lessons from Latin America. Growth and Investments in South Africa.

APERC. 2002. "Indonesia: Energy Overview." Asia Pacific Energy Research Centre, Institute of Energy Economics, Tokyo. Downloaded on October 9, 2002, from <http://www.ieej.or.jp/aperc/o_pdf/Indonesia.PDF>.

Bruinsma, F. 1995. "The Impact of New Infrastructure on the Spatial Patterns of Economic Activities." Free University Research Memorandum, Amsterdam.

DFID. 1998. "Basic Infrastructure for Poor People." Department for International Development. London.

Duflo, E. 2000. "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment." NBER Working Paper No. 7860. National Bureau of Economic Research, Cambridge.

Easterly, W. 2001. "The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics." MIT Press, Cambridge.

Filmer, D., S. Sayed. 1999. "Impact of Economic Crisis on Basic Education in Indonesia." World Bank East Asia and Pacific Region Watching Brief Issue 2, January. The World Bank, Washington, D.C.

Gyamfi, P. 1992. "Infrastructure Maintenance in LAC: The Cost of Neglect and Options for Improvement, Vol. 4: The Road Sector." Latin America and Caribbean Technical Development Department Regional Studies Program Report 17. World Bank, Washington, D.C.

Hulten, C. 1996. "Infrastructure Capital and Economic Growth: How Well You Use It May Be More Important than How Much You Have." NBER Working Paper No. 5847. National Bureau of Economic Research, Cambridge.

ITU. 2001. "Telecommunication Development in South East Asia: Moving Ahead, Despite Financial Crisis." ITU Telecommunication Indicators Update. Telecommunication Data and Statistics, ITU/BDT, Geneva.

KKPPI. 2003a. Komite Kebijakan Percepatan Pembangunan Infrastruktur of the Government of Indonesia, Jakarta. Downloaded on December 2, 2003, from <http://www.kkppi.go.id/policy01.htm>.

KKPPI. 2003b. "White Paper." Komite Kebijakan Percepatan Pembangunan Infrastruktur of the Government of Indonesia, Jakarta. Downloaded on December 2, 2003, from <http://www.kkppi.go.id/policy01.htm>

Komives, K., D. Whittington, W. Xun. 2001. “Infrastructure Coverage and the Poor: A Global Perspective.” University of North Carolina, Chapel Hill.

Levine, P. and T. Krichel. 1994. "Growth, Debt and Public Infrastructure." University of Surrey, United Kingdom.

Levinsohn, J., S. Berry, J. Friedman. 1999. “Impacts of the Indonesian Economic Crisis: Price Changes and the Poor.” NBER Working Paper No. 7194. National Bureau of Economic Research, Cambridge.

McGuire, P., J. Conroy. 1998. “Effects on Microfinance of the 1997-1998 Asian Financial Crisis.” The Foundation for Development Cooperation, Brisbane.

Otto, B. 1999. “The Impact of the Asian Financial Crisis on Health Sector in Indonesia.” MacFarlane Burnet Centre for Medical Research Report. Commissioned by AusAID, Canberra.

PHPCR. 2002. “Building Human Security in Indonesia: Education – Overview.” Program on Humanitarian Policy and Conflict Research, Harvard College. Downloaded on October 9, 2002 from <http://www.preventconflict.org/portal/main/background_education.php>.

Poppele, J., S. Sumarto, L.Pritchett. 1998. “Social Impacts of the Indonesian Crisis: New Data and Policy Implications.” SMERU Report. Social Monitoring and Early Response Unit, Jakarta.

Small, M. no date. “How Has Indonesia’s Desire for Food Self Sufficiency in Rice Compromised Its Ability to Address the Issues of Sustainable Agricultural Development?” Journal Paper Review, Colby College, Maine. Downloaded on December 31, 2003, from <http://www.colby.edu/personal/t/thtieten/ag-ind.html>

Strauss, J, K. Beegle, A. Dwiyanto. 2002. “Indonesian Living Standards Three Years after the Crisis: Evidence from the Indonesian Family Life Survey.” University of Gajah Mada, Yogyakarta.

Suryahadi. A., S. Sumarto, L. Pritchett. 2003. “Evolution of Poverty During the Crisis in Indonesia.” Asian Economic Journal, 17(3), pp. 221-241.

UNDP. 1990. "Human Development Report: Concept and Measurement of Human Development." United Nations Development Programme, New York.

UNESCAP. 1996. “Indonesia: Country Paper on Government Infrastructure Priority Reports and Capability Statements.” Economic and Social Comission for Asia and the Pacific, United Nations, Bangkok.

URDI. 2000. “Jakarta after the Economic Crisis from the Perspectives of Infrastructure.” URDI Newsletter. Urban and Regional Development Institute, Jakarta. Downloaded on October 9, 2002, from <http://www.urdi.org/bulletin/volume-8.asp>.

van der Linden, G. 2001. "Infrastructure: A Key Challenge for Poverty Reduction in Asia." Paper presented at the KFW-ADB Conference on Infrastructure and Poverty Reduction in Asia. KFW-ADB, Berlin.

Wetterberg, A., S. Sumarto, and L. Pritchett. 1999. "A National Snapshot of the Social Impact of Indonesia's Crisis." Bulletin of Indonesian Economic Studies, 35(3), pp. 145-152.

WHO. 2002. "Country Health Profile: Indonesia." World Health Organization South East Asia Regional Office, United Nations, New Delhi.

Widiono, E. 2000. "Investment Opportunities in the Restructured Power Sector." PT PLN, Jakarta. Downloaded on October 9, 2002, from <http://www.aeeseap.org/conf2000/contents/06/0601.pdf>.

World Bank. 1997. "World Development Report 1997." The World Bank, Washington, D.C.

World Bank. 2001. "Cambodia PRSP Workshop: Infrastructure Services and Poverty Reduction." Downloaded on December 5. 2003 from <http://www.worldbank.org/poverty/strategies/ events/cambodia/infra.pdf>.

World Bank. 2002a. "Education in Indonesia: Impact of the Crisis." Social Policy and Governance in the East Asia and Pacific Region, World Bank, Washington, D.C. Downloaded on October 9, 2002 from <http://www.worldbank.org/eapsocial/countries/indon/educ2.htm>.

World Bank. 2002b. "Health and Nutrition in Indonesia: Impact of the Crisis." Social Policy and Governance in the East Asia and Pacific Region, World Bank, Washington, D.C. Downloaded on October 9, 2002 from <http://www.worldbank.org/eapsocial/countries/indon/health1.htm#impact>.

World Bank. 2003. "Averting an Infrastructure Crisis: A Framework for Policy and Action." The World Bank, Jakarta.