

Master Thesis

**THE CONTRIBUTION OF INFRASTRUCTURE TO
RURAL DEVELOPMENT: THE CASE OF THE
VILLAGE INFRASTRUCTURE PROJECT FOR
JAVA, INDONESIA**

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ABSTRACT

This thesis evaluates the contribution of rural infrastructure to rural development and formulates the consideration of rural infrastructure development planning by employing the Village Infrastructure Project for Java, Indonesia (VIP) case. VIP contribution is evaluated by economic, social, and environmental aspects. Rural characteristics, the role of stakeholders and the type of infrastructure are discussed in formulating how to plan rural infrastructure development. Rural infrastructure contributes positively to rural development, while some shortcomings must also be recognized to improve the rural infrastructure development. This study proposes public to perform the community-government partnership with the small-scale project and the local-served facilities for rural infrastructure development in rural Java, Indonesia.

Keywords: *rural infrastructure contribution, rural development, rural Java-Indonesia*

PREFACE

Although the most of development problems in Indonesia are embedded in rural sector/area, convincing public to pay more attention for rural development is not a simple task. This thesis is focused on studying the contribution of infrastructure to rural development; the Village Infrastructure Project for Java is taken as the case of this thesis. Some lessons can be learned from this case for rural infrastructure development planning in Indonesian context.

This thesis is the final part of my master study in Environmental and Infrastructure Planning, Faculty of Spatial Science, *Rijksuniversiteit Groningen*. Many people and institution made my master study possible, to whom and which I owe my gratitude. First of all, I would like to thank Prof. Peter Ho, Prof. Tommy Firman and Ir. Widiarto, MSc., PhD for giving me advice and feedback on my thesis. As the Dean of Faculty of Spatial Science and the coordinator of double degree program ITB, I would like also to thank Prof. Gerard Linden and Ir. Haryo Winarso, MEng., PhD respectively. Many thanks are devoted to Directorate of Food and Agriculture BAPPENAS, Pusbindiklatren BAPPENAS, UPT Bahasa ITB, Planologi/SAPPK ITB, STUNED, all Indonesian students in Groningen, and my classmates. Furthermore, my gratefulness is dedicated for my families in Wonogiri and Klaten; your support and attention are very helpful. Finally, my special gratitude goes to my wife, Evi, and my son, Rafif, for your great patience and support.

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CHAPTER I

INTRODUCTION

1.1. BACKGROUND

During *New Order* era (1969-1994), physical infrastructure development in Indonesia had been the highest priority in the national budget allocation. This priority had been taken to accelerate economic purpose of development. By 1970s when oil price increased, central government had enough funding capacity to build physical infrastructure. In the period of 1969-1997, 44.6% of total development expenditure went for physical infrastructure. The rest was for agricultural programs and social services. Before 1970s, roads and power facilities had been the focus of infrastructure development. In the 1970s, because of hunger problem, government started to provide irrigation system. Social services were becoming public attention of infrastructure development in the 1980s. Through *Instruksi Presiden* (President Decree), national program to build education, health, and water supply had been performed by national government (Darja *et al.*, 2004).

From 1970s to 1995, many improvement of development had been achieved. In macro level, infrastructure contributed to economic recovery in the early stage of the first five year plan. Poverty incidence tended to decline. Average of road access in all provinces had increased. Irrigated areas had also been extended. Furthermore, massive infrastructure investment made agricultural productivity increase (Timmer, 2004).

As described before, infrastructure development for rural areas had aimed mainly at supporting agriculture sector, especially for increasing crop production and productivity. In 1976, about 17.2% of development expenditure was allocated for agricultural infrastructure. This proportion was going down in which it was some 7% in 1986. In 1996, government allocated higher percentage (around 10.5%) for this development (Kwon, 2006). In the case of irrigation project, under *Instruksi Presiden* (President Decree), government a massive component to built and expand irrigation network. Irrigated land extended from 3.7 million ha in 1970 to 4.9 million ha in 1984. In the case of rural social context, *Instruksi Presiden* also delivered school and health service for rural areas. By this mechanism, the number of primary school increased roughly doubled. The number of health center in subdistrict (*Puskesmas*) also increased from 3,735 in 1974 to 7,602 in 1998 (Darja *et al.*, 2004).

Although infrastructure development had achieved some enhancements, we also witnessed some notes. In 1996, the coverage of water supply is low relatively, some 17.6% of total population. The 1997 economic crisis has worsened infrastructure development in general, including rural infrastructure provision. The

funding capacity of government has decreased tremendously so that the infrastructure construction, rehabilitation, and maintenance have been sacrificed. Over this economic crisis period, a lack of public budget capacity forced government to focus more on monetary and banking sector; in turn, real and infrastructure sector has not been much prioritized (Dikun, 2003). In 1998, the infrastructure development investment of electricity, gas and drinking water decreased by 3.1 per cent. In 2000, lack of maintenance caused 49 per cent road disrupted. Irrigation network was not running as expected for watering 6.7 ha paddy field, and 73 per cent of bad irrigation system is in Java.

Moreover, in the context of rural development, rural population with electricity was less than 60% in 1996. Especially for rural sectors, irrigation system had only covered some 25.2% of total arable land. In rural Java, the accessibility of village to rural infrastructure needs to be improved, especially in the case of junior and senior high school and health center (Table 1). Moreover, the provision of infrastructure tends to be concentrated in urban areas than in rural areas. Wood (1986) and Firman (1999) point out that infrastructure facilities encourage economic concentration in urban area; in turn, it leads to rural-urban migration. This sector does not have the public support proportionally including infrastructure provision (Timmer, 2002), as Lipton (1977) calls this phenomenon as urban bias. In general, it is apparent that infrastructure development has focused more in urban areas than in rural areas. This state of rural infrastructure condition is getting worse after the economic crisis.

Table 1. The Trend of the Proportion of Village Accessibility to Rural Infrastructure in Rural Java-Bali (%)

Rural Infrastructure	1996	1999
Public School		
- elementary school	98.6	98.4
- junior high school	12.3	14.5
- senior high school	2.4	3.1
Subdistrict health center	31.3	35.5
Households access to drinking water	75.2	74.8

Source: compiled from Darja *et al.*, 2002

Infrastructure is one of the main keys in promoting rural development. In other countries, researchers have studied the contributions of rural infrastructure on rural/agricultural development, for instances Felloni *et al.* (1996) and Antle (1983). They try to prove the significance of infrastructure in dealing with rural problems, such as poverty, backwardness, accessibility, mobility, agricultural production, and agricultural productivity.

Those development issues are relevant to rural Indonesian. The most of poor people are agricultural families. The rural and agricultural human capital level, such as the level of health, of education, and of skill, is left behind compared to that in urban areas so that rural labor cannot enter easily to get job opportunities in other sectors. Kusago (2002) finds that rural infrastructure is one of some factors affecting the accessibility of rural households to non-farm business. Moreover, the productivity of rural sector is less than others. The agricultural share to the total GDP tends to decrease; from 22% of total GDP in 1986 to 16% of total GDP in 2003 (ADB, 2004).

Therefore, rural development is a challenging issue in Indonesia case, not only because most of development problems and potentials are located in rural areas, but also because of the fact that the study of this issue is still rare. The study of the contribution of infrastructure to rural development can be a critical input to the recent Indonesia development policies called the revitalization of rural/agriculture sector. Urging government to pay more attention to the rural infrastructure development needs background study analyzing how significance it is on the rural development. Furthermore, policy alternatives of rural infrastructure development will help government to promote rural development.

This study will depict the contribution of infrastructure to rural development. It will also offer some idea with regard to planning for rural infrastructure development. The importance of its result is to enhance the academic references discussing this issue in Indonesian case; there are few studies of it in Indonesian context. An academic background of to what extent the rural infrastructure can affect the rural development is going to be exercised too. Government will get benefits from it because this result can be an academic basis in paying more attention to rural sectors as one of the national government policies now.

1.2. RESEARCH OBJECTIVES AND QUESTIONS

This study aims at analyzing to what extent the infrastructure contributes to rural development in Indonesia. Three aspects will be used to see them: economic, social, and environmental aspects. The research objective will be guided by answering several research questions as followed:

- a. what can be learned about the contribution of infrastructure to rural development in some developing countries? The case of VIP will be used to study its contribution in Indonesian context.
- b. what rural characteristics must be considered in rural infrastructure development planning; and
- c. what consideration should be taken into account in order to improve rural infrastructure development planning.

1.3. RESEARCH METHODOLOGY

1.3.1 The Data Sources

Data and information will be collected from relevant references (books, articles, electronic journals and so forth) which are related to rural and agricultural sectors, rural development, and rural infrastructure development. Furthermore, statistical data from World Bank, ILO, UNDP, and the Indonesian Central Bureau of Statistic will also be explored to demonstrate certain trends or to support a certain argument.

1.3.2 The Analytical Method

This study will be conducted mostly based on literature study. The description analysis of the Indonesian rural development, of rural infrastructure provision, and of their particular government policies will be performed to answer the research questions on those aspects. Moreover, theoretical review will be employed to answer the research question about the role of rural sectors and the significance of infrastructure facilities on rural development. Finally, formulating the government policy planning of rural infrastructure development planning to promote the rural development needs policy analysis based on the facts and results of this study.

1.3.3 The Scope of Study

As described before, although the contribution of rural and agricultural sectors in GNP has been important in development --the most potentials and problems of Indonesian development are embedded in these sectors--, but the infrastructure development as a public investment is more concentrated in the urban areas (Firman, 1999). In general, "it is obvious that dynamic growing regions have a well-developed infrastructure, whereas lagging regions are typically deficient" (Vickerman, 1991: 1). In the Indonesian context, Dikun (2003) believes that the role of infrastructure in regional and sectoral development is very essential. He also convinces us that the infrastructure provision is not sufficient yet in Indonesia. Furthermore, the study of rural infrastructure development in Indonesian context is still limited.

The concept of infrastructure is broad. Infrastructure can be regarded as soft infrastructure such as institutional, rule of the game of the actors, etcetera and hard infrastructure such as physical facilities (Murdoch, 2000). This study will only focus on the hard infrastructure scope, such as rural roads, irrigation network, water supply, and so forth. It does not mean that soft infrastructure is not important in the rural development (Cook, 1991; Healy, 2004), but this limitation is needed to demarcate the study scope.

This study is framed to focus more on the development planning level, not to cover the technical issues of rural infrastructure. The technical characteristics could be considered as the basis information or reason in examining the planning of rural infrastructure facilities.

The contribution of infrastructure will be delineated into three aspects: economic, social, and environmental aspects. The analysis in this issue will be limited in micro level. Each aspect will be elaborated into more specific indicator that will be explained in Chapter II. The case of Village Infrastructure Project (VIP) in Java will be used in this study. This project had been conducted for three years since 1995. This case is chosen because:

- a. this project had been focused on building infrastructure facilities in rural areas;
- b. the time when this project had been implemented was quite long to evaluate the impact of this project;
- c. the implementation of this project (1995) was a time before the economic crisis hit and the decentralization established; and
- d. the last but not least, the information about this project is fairly reliable so that the analysis of this study can be done.

1.3.4 Thesis Outline

The report of this thesis is divided into five chapters. Chapter I will present the background, the objectives and questions, the methodology, and the scope of this study. Chapter II will discuss the theoretical framework of infrastructure contribution to rural development and of planning rural infrastructure development. Sustainable development concept detailed by human development perspective will be employed to analyze infrastructure contribution. To converse rural infrastructure development planning, rural characteristics, stakeholder role, and the type of infrastructure will be taken into consideration of planning for rural infrastructure development planning. Chapter III is devoted to discuss the contribution of infrastructure to rural development. The case of the Village Infrastructure Project for Java (VIP) will be used in discussing that contribution in Indonesian context. The analysis of this contribution will be divided into three main aspects: economic, social, and environmental aspects. Before that, some experiences from several developing countries will be presented. Using the theoretical framework of Chapter II, the information from Chapter III will lead the discussion to the Chapter IV which analyzes planning rural infrastructure development in Indonesia. Three sub-themes which are rural characteristics, stakeholder role and infrastructure type will be considered in this chapter. This thesis report will end up with conclusion part consisting of some concluding remarks and recommendations.

This chapter explains the background why this thesis topic is chosen. It formulates the benefits of this study in Indonesian context. Moreover, the research objectives and questions, the methodology, and the scope were defined. Then, the next chapter will elaborate the theoretical framework which will be used in the discussion parts of this thesis.

CHAPTER II

THEORETICAL FRAMEWORK

This chapter will formulate the theoretical framework that is going to be used to answer and analyze the research objectives and questions. There are three main parts in this chapter. The *first* is going to formulate the analytical framework of the contribution of infrastructure to rural development; and the *second* will present the framework of rural infrastructure development planning in Indonesian context. The *last* section will describe the Village Infrastructure Project for Java (VIP) as the case of this study.

2.1. THE CONTRIBUTION OF INFRASTRUCTURE TO RURAL DEVELOPMENT

This part is devoted to frame what theory that can be used to examine the contribution of infrastructure to rural development. Because infrastructure facilitates and supports the achievement of development, examining its contribution is closely related to the meaning of development itself. Referring to Ingham (1993), there are nine perspectives of development: a) development as growth, b) development as structural change or industrialization, c) development as modernization, d) development in term of political change, e) decentralization and participation in development, f) development as redistribution and basic needs, g) people-centered view of development or well-known as human development, h) sustainable development, and i) an ethic view of development.

This study does not exercise all the development perspectives, but focusing on the two of them: human development and sustainable development perspectives. These two perspectives were chosen because that those are recent views of development relatively so that it is assumed that both can accommodate the first six perspectives. In more detail reason will be discussed later in each two perspectives. Moreover, the last view is not much related to, or I may say, difficult to be examined in the study of hard infrastructure. In more specific argumentation, below are briefly presented both concepts.

2.1.1. The Sustainable Development and The Human Development Perspectives

The Sustainable Development Perspective. Sustainable development concept is pioneered by environmentalists. This concept has emerged in order to make balance between development and ecological interests. In 1987 the Brundtland

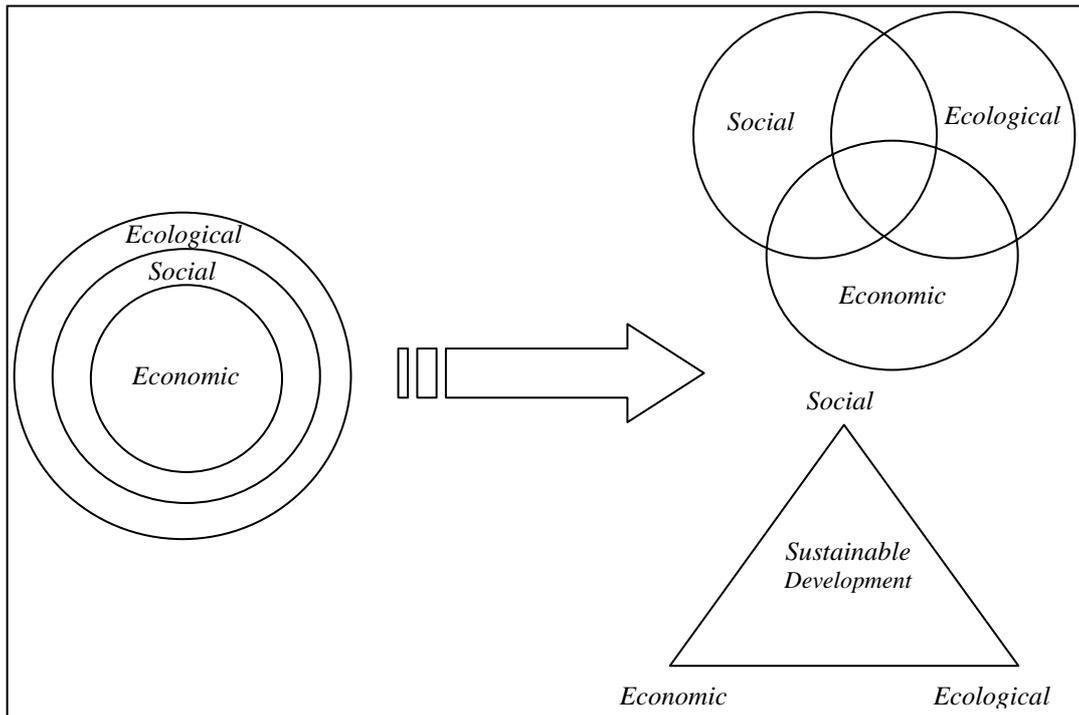
Commission defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” Although most believe that this concept is comprehensive and is needed in our life, it is still broad; people have different interpretation. This part will not discuss many interpretations of sustainable development concept. Because of this reason, this study will not use a certain definition of sustainable development, but employing the pillar of sustainable development. In this early part, it is argued that infrastructure contributes to build and maintain the pillar of sustainable development.

In the early concept, sustainable development was proposed to synergize the interests between economic development and ecological aspect. That is why in the beginning, there were only two pillars of sustainable development, development and environment (ecology). The enhancement of this concept has been developed. Some believe that development pillar itself was more focused on material thing and avoided social aspect of development. Based on this notion, the pillar of sustainable development enhances consisting of three aspects: economic, social, and environmental pillars. Those become the bottom line of sustainable development (Pope et al., 2004).¹

All three pillars are embedded and inter-related each other. People can not put aside one or two pillars. There are two main approaches in seeing the interdependency of sustainable development pillars. The *first* views that those pillars as a circle in which economic element in the center, social aspect in the in-between, and the outer is ecology. This view is based on the fact that the dominance of economic interest is observable in praxis. Ecological and social aspects tend to be neglected when development is planned or implemented. In this approach, economic development must be limited by social aspect, and then social goals have to be restricted by ecological interests. The *second* approach suggests that all pillars have equal proportion and value. Development will sustain if all pillars will be maintained mutually. It is represented (Figure 1) as three intersecting circles (Pope et al., 2004).

Regarding to the topic of this study, the pillars of sustainable development perspective can be utilized as a theoretical framework of analyzing the contribution of infrastructure to rural development. In rural development, economic, social and environmental aspects are inter-linked each other. All aspects need the provision of infrastructure. The way of how infrastructure plays role in those aspects will be elaborated later in the first part of Chapter III.

¹ In another article, Gibson (2001) has different opinion. He presents that sustainable development consists of five pillars, which are social, economic, ecology, cultural, and political aspects. This study will delineate not to discuss about cultural and political aspect. Therefore, three bottom line concept of sustainable development will be used.



Source: Pope et al., 2004, p. 598-599

Figure 1. Three Pillars of Sustainable Development

Those sustainable development pillars are still broad. We can not use those aspects yet in studying infrastructure contribution to rural development. Each aspect must be detailed into some specific and measurable variables. The indicator from human development indices will be exercised to detail those three aspects.

The Human Development Perspective. As the refinement of goods-oriented development perspective (Ingham, 1993), human development view has been advanced by UNDP since 1990s. UNDP generalizes all aspects of development into three main indexes: life expectancy, education, and income (UNDP, 2005). The proportional value of those three key components of human development represents the human development index. This index is used to rank the achievement of development of each member country of UN.

The life expectancy index is mainly represented by the delivery of health sectors. The provision of health facilities, then, is essential in this development perspective. The second index, which is education index, is clearly determined by the availability of education infrastructure. The more available of education facilities, the higher of the human development index is being achieved. Finally, GDP per capita is used to approach the income index. In this concept, infrastructure development can play vital role to facilitate the human development level by providing, for instances, school, health center, market center and so forth. Since 2000, the human

development index has been advanced by the millennium development goals (MDGs). More detail goals, targets, and indicators have been set.²

The index of human development is commonly implemented to assess the achievement of development; most countries are familiar with this perspective. The availability of data and information regarding to the MDGs is also more reliable. Moreover, every year, each member country has to send the progress report of their achievement so that the trend of development can be traced. Based on this fact, this study chooses in using use human development perspective as the theoretical framework of the contribution of infrastructure to rural development.

The achievement of MDGs calls for the availability and accessibility of infrastructure. The provision of education aspect goals is impossible to be reached unless the education infrastructure facilities are available for people. Health facilities and services must be developed to reduce child mortality, to improve maternal health, and to combat diseases. These infrastructure facilities are also vital to provide basic social services. Promote market access, increasing income, and alleviating poverty needs the support of infrastructure provision. Generally speaking, human development perspective complemented by the MDGs can be utilized to study the contribution of infrastructure on rural development.

Based on the discussion above, infrastructure facilities are much related to those two views of development. Accordingly, in my opinion, those perspectives can be used as the analytical framework in studying the contribution of infrastructure to rural development. Considering both three pillars of sustainable development and the indicator of human development index, it seems complementarily each other. Or I may say that human development indexes are a part of three bottom lines of sustainable development. As a result, this study can not employ those two development perspectives simultaneously and separately as a theoretical framework, rather this study will synthesize a combined theoretical framework based on two perspectives.

2.1.2. The Theoretical Framework of the Contribution of Infrastructure to Rural Development

Infrastructure facility contributes to development. Although development has many conceptions and meanings, but this study will only exercise two development perspectives (human development and sustainable development). In sustainable

² In the MDGs, the achievement of development is measured by 8 goals, 18 targets, and 48 indicators. Those 8 goals are: a) eradicating poverty and hunger; b) achieving universal primary education; c) promoting gender equality and empowering women, especially on education opportunity; d) reducing child mortality; e) improving maternal health; f) combating HIV/AIDS, malaria, and other diseases; g) ensuring environmental sustainability, including accessibility of drinking water; and h) developing a global partnership for development, including providing basic social services, promoting market access, and developing accessibility of information (telecommunication). Member state agrees to reach that goals in 2015.

development view, the contribution of infrastructure can be categorized into three main aspects (economic, social, and ecological). In human development perspective, the contribution of infrastructure can be analyzed based on specific indicator: longevity index (health condition, disease prevalence, environmental quality, water supply), education index (literacy, knowledge, skill, capacity building), and income index (income, poverty, market access, production and productivity, food security). All aspects and all indicators are related to infrastructure provision.

By comparing the components of both concepts, it is realized that, on the one hand, sustainable development perspective uses higher classification (society, economic, and ecology); on the other hand, human development perspective gives more detail and observable measurements (health condition, literacy, knowledge, income, production, environmental quality, and so forth). Therefore, the pillars of sustainable development need the elaboration into more measurable elements; and, human development indicators can be used to elaborate the three pillars of sustainable development (see Table 2).

Table 2. The Theoretical Framework of Infrastructure Contribution to Rural Development

Three Bottom Line of Sustainable Development	Human Development Index and MDGs
Economic	<ul style="list-style-type: none"> • Income and poverty, production/productivity, market access, food security
Social	<ul style="list-style-type: none"> • Education, literacy • Health condition, disease prevalence • Capacity building
Ecology	<ul style="list-style-type: none"> • Erosion, water availability, deforestation

This study will employ this theoretical framework put forward in Table 2 in studying the contribution of infrastructure to rural development in Indonesia. Within this framework, it will be studied the impact, both positively and negatively, of infrastructure on rural development. Furthermore, the kind of contribution in each impact is also going to be revealed.

2.2. THE RURAL INFRASTRUCTURE DEVELOPMENT PLANNING

It is not easy to formulate an appropriate the academic definition of it. There are several definitions of infrastructure. Webster dictionary defines infrastructure as “the underlying foundation of basic framework”. Hirschman (*in Jimenez, 1994, p. 1*) and Jochimsen (*in Biehl, 1991*) classify all types of public services as infrastructure. Infrastructure is also understood as “the underlying foundation or framework of basic

services, facilities and institutions upon which the growth and development of an area, community or a system depend” (Larimer, 1994).

The classification of infrastructure also varies. Biehl (1991) divide infrastructure into two categorizations, which are network type (such as road, water supply and so forth) and point type of infrastructure (for instance school, health facilities, and so forth). Another classification is used by Jimenez (1994) who classifies it into two classes of infrastructure: physical infrastructure (transport, electricity, etc.) and human infrastructure (school, health, etc.). Wanmali and Islam (1995) have different categorization. They divide infrastructure into three types: hard infrastructure (for example road, telecommunication, irrigation, etc.), soft infrastructure (for instance mode of transport, agricultural input, finance, marketing, etc.), and institutional infrastructure (regulation, management, etc.). Finally, Linden et al. (2004) classify infrastructure into two forms, which are visible (road, railway, etc.) and invisible infrastructure (aviation route, digital network, etc.). Each classification and definition has different implication. Each typology also has different context of its application, for example in delineating the scope of discussion. This thesis will only focus on hard infrastructure covering both network and point types of infrastructure.

This study is to review the characteristics of infrastructure in general. One characteristic of infrastructure is its publicness (Biehl, 1991). There are a bundle of specifications under this characteristic, which are indivisibility, non-substitutability, immobility, and polyvalence. In addition, Jimenez (1994) identifies that infrastructure is characterized by a scale of economies of its production. He also reveals that infrastructure has high externality and high degree of non-exclusivity in its consumption (Jimenez, 1994).

Especially for network infrastructure, it is usually understood that this type of infrastructure have to connect to other parts or other locations; so, connectivity can become the characteristic of infrastructure. Because of those features, the provision of infrastructure facilities is relied heavily on public agency. In this part, government plays an important role on delivering infrastructure facilities.

Nowadays, the capacity and capability of public agency is not unlimited, for instance their financial and human resources aspect. Realizing those limitations and trying to reach the resource allocation efficiency, public-private partnership has emerged in dealing with the provision of infrastructure (Linden et al., 2004). Not only government-led or public-private provision of infrastructure, but also society or community demands to be involved in developing infrastructure facilities (Glasbergen and Driessen, 2005).

The infrastructure development has to be adjusted in the context in which this facility will be developed; in this case, it is rural context. The characteristic of rural areas/sectors is different with that of urban. It leads to the consequence that

infrastructure development aimed at supporting rural development must consider the characteristics of rural areas and sectors. For example, *gotong royong*³ is a unique characteristic of rural society, which can be a local mechanism to encourage villager participation in building public infrastructure. Related to the type of infrastructure, for instance, choosing the best type of infrastructure adjusted to rural characteristics is a must; whether it will be developed network type or point type of telecommunication facilities. The provision of infrastructure facilities in rural areas/sectors should also think about the characteristics and capacity of all stakeholders, either government or private or society/community.

Based on the explanation above, this study develops the theoretical framework of the provision of infrastructure facilities in rural sectors/areas. To plan infrastructure for rural development should take rural characteristics into account. Planner should realize that rural is different with urban. This characteristic also determines the type of infrastructure which is suitable for rural. The role of stakeholders should be adjusted to rural characteristics too, for example private is less interested in investing for infrastructure in rural rather than in urban. Figure 2 shows this theoretical framework that will be utilized in this study.

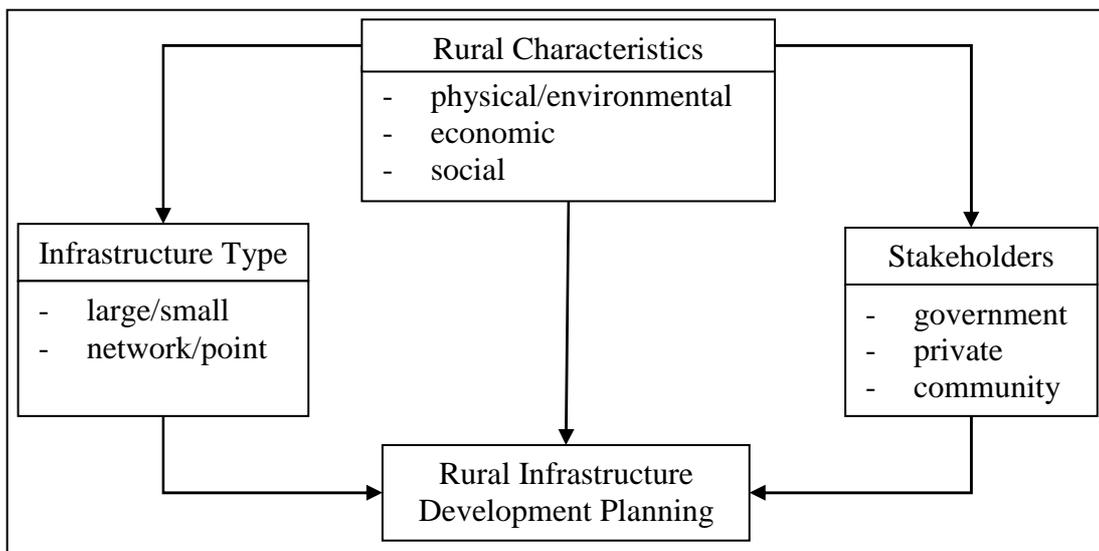


Figure 2. The Theoretical Framework of Rural Infrastructure Development Planning

³ *Gotong royong* means mutual and collective social activities (Bowen, 1986), especially related to deal with public issue, such as in building rural bridge.

2.3. THE VILLAGE INFRASTRUCTURE PROJECT FOR JAVA (VIP)⁴

2.3.1. Background

Poverty has been a big issue and one of development priorities in Indonesia. Realizing the fact that poverty incidence has been still high, the government intends to speed up the process of poverty reduction. The Village Infrastructure Project for Java (VIP) was a project dedicated to this process. VIP was financed jointly by the Government of Indonesia and the World Bank. This project was a part of the poverty alleviation program of Indonesia within *Inpres Desa Tertinggal* Program (President Decree for Underdeveloped Villages). It is also a priority of the World Bank program on poverty reduction. While other activities in IDT program had assisted poor villages by providing working capital for the poor, VIP had focused on building small infrastructure facilities in poor villages. It is assumed that infrastructure accessibility can increase social and economic level in poor villages. It is also expected that small infrastructure development can allow villagers to participate and contribute in this project.

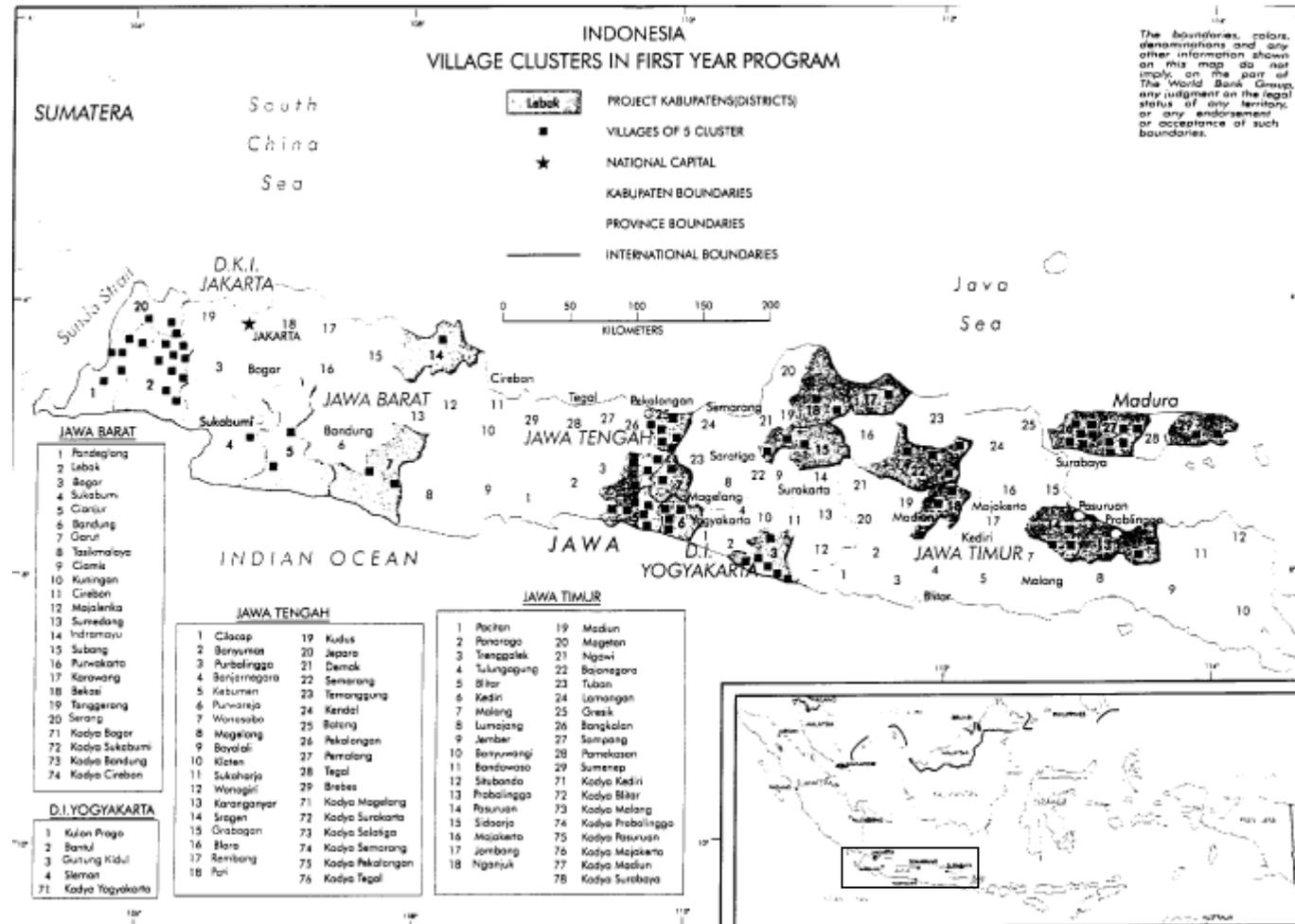
According to the World Bank documents (the World Bank, 1995), building small infrastructure in the poor villages on Java was chosen because of:

- a. villages on Java have larger populations (about 60% of Indonesia's population in 1993) so that more people will benefit from this project;
- b. the construction cost are lower on Java than outside Java; more can be achieved rather than allocating this fund in off-Java;
- c. in Java, the cash may be more easily used in a productive way than in outer island of Java;
- d. the number of the poor in Java is more than that in outside Java; in 1993, Java has the most poor, some 56% of the total or about 15 million; and, almost 60% or around 8.2 million live in rural villages; and
- e. Java has also higher infant mortality and high malnutrition.

This justification does not mean that government neglects the poor in outside Java; in this term, they were covered by another project supported by OECF.

VIP had covered about 4 provinces (West Java, Central Java, Yogyakarta, and East Java) or about 100 districts (*kabupaten*) or 1,200 villages with some 3 million people (Figure 3). The implementation of this project had been for 4 years (1996-2000). Total fund of this project was \$ 72.5 million in which share of Government of Indonesia was 13.5% and the rest (86.5%) was from the World Bank. VIP had been extended covering poor villages in Sumatra Island (Second VIP).

⁴ The main literatures in this section are the document of Staff Appraisal Report of VIP (The World Bank, 1995) and the document of Staff Appraisal Report of Second VIP (The World Bank, 1996).



Source: The World Bank (1995), p. 54 (Annex)

Figure 3. The Map of the Village Infrastructure Project for Java, Indonesia (VIP)

2.3.2. Project Objectives

VIP aims at reducing poverty by providing village infrastructure and employment paid in cash and supporting decentralization. Both main aims are in line with the Government objectives. In a specific way, the objectives of this project are:

- a) to empower villagers to decide their priority for their own village;
- b) to provide public infrastructure needed in poor villages;
- c) to create jobs paid in cash for villagers to construct the public works;
- d) to mobilize village contributions and participations; and
- e) to support the Government's decentralization policies and to reduce non infrastructure constraints to trade and transport in the rural areas.

2.3.3. Scope

The main goal of VIP was to accelerate the poverty alleviation process in rural villages. For the first stage, this goal will be approached by providing small infrastructure facilities, such as rural road, bridge, water supply, market, and so forth, for the rural poor in Java. This project was characterized by labor intensive activity. The goal was also to offer jobs during this implementation, especially in the construction. Moreover, because VIP was to support government decentralization program, it had also given in the extent of its process, in which “*the villages selected are to decide the works they want and that comply with a simple economic criteria, technical assistance ... (and) financing will be provided directly through sub-district bank units ...*” (The World Bank, 1995). So, VIP was a targeted program for the poor in the rural areas.

2.3.4. Selection of Targeted Village

The selection of targeted village was based on the 1993 PODES data (*Data Potensi Desa* – Village Potential Data) surveyed by Central Bureau of Statistic⁵. VIP was focused on the highest concentration of the poorest villages. Cluster of 5 villages in which both this cluster includes at least 3 extremely poor villages and each village consists of at least 700 populations was selected. In the first year, the IDT Secretariat selected 415 villages (Table 3); and in the second year, the selected villages were increasing becoming some 800 villages. Then, the bupati (District Head), in consultation with camat (Subdistrict Head) verified this selection results.

With some evaluation and verification, the Government and the World Bank agreed on the list of targeted villages. Afterward, bupati and camat will inform the kepala desa (Village Head) and gave the information about this activity. It was allocated a standard of Rp 120 million (or around \$ 55,000) for each village. This fix amount of money was established because of simplicity and transparency of this

⁵ In this data, infrastructure provision becomes one of some indicators of left-behind village. Poor village is indicated by having infrastructure deficiency.

program. This fund was transferred directly to villages through subdistrict bank units; and the allocation was recorded in the district level.

Table 3. The Proposed Targeted Villages of VIP (The First Year Program)

Province	Priority District	Total of which		Selected in Clusters	
		Poor Villages	Extremely Poor Villages	Poor Villages	Extremely Poor Villages
West Java		788	140	120	92
	Pandeglang	167	33	30	23
	Lebak	177	49	45	41
	Sukabumi	58	10	5	3
	Cianjur	96	15	10	7
	Garut	60	8	10	6
	Indramayu	90	12	5	3
	Serang	140	13	15	9
Central Java		972	181	145	102
	Banjarnegara	101	18	20	14
	Kebumen	178	38	30	21
	Purworejo	150	25	20	14
	Wonosobo	108	12	10	7
	Grobogan	85	18	15	9
	Rembang	125	20	5	3
	Pati	84	22	10	10
	Batang	141	28	35	24
DI Yogyakarta		62	21	30	20
	Gunung Kidul	62	21	30	20
East Java		808	143	120	83
	Probolinggo	87	11	10	6
	Pasuruan	103	16	15	10
	Nganjuk	85	8	10	7
	Bojonegoro	147	25	20	14
	Bangkalan	164	38	30	21
	Sampang	104	20	25	17
	Sumenep	118	25	10	8

Source: The World Bank, 1995, p.24, Annex 2

2.3.5. Selection of Infrastructure Facilities

The infrastructure should comply with what village needs; consequently, each village will have a different proposed infrastructure facilities. After discussing the infrastructure needs with the inhabitants and LKMD (village community resilience institution), Village Head submits its proposal to Subdistrict Head. Supported by

field engineers, Subdistrict Head will evaluate and justify village proposals regarding to the needs, the financial feasibility, and the labor availability. The next process is to submit proposals from subdistrict to district, to province, and to IDT Secretariat in order to get endorsement.

According to the Project Manual of VIP, there are several requirements for approval in this project, which are:

- a) the proposed infrastructure must be a public infrastructure justified by the number of users and the cost per user;
- b) the fund sourced from a standard amount of Rp 120 million and any village contribution must be sufficient to do the proposed project;
- c) land requirements must minimize the negative impact of reducing farm land for landowners and potential clash;
- d) labor involved in and benefited from this project must be maximized; and
- e) the proposed activity must have a good plan of maintenance the facility.

2.3.6. Implementation, Monitoring and Supervision

VIP was characterized by labor-intensive activity. As well as providing public infrastructure, this project was aiming at giving jobs for villagers. Farmers have average income less than \$ 1 dollar per day. In general, farming activity is executed during the rainy season when water resource is available enough for farming. During dry season, they are temporarily unemployed. Therefore, the construction of the project implementation was scheduled during the dry season. VIP was a small scale infrastructure project. It was planned that each project will complete in 2.5 years.

The World Bank and the Government of Indonesia monitored and supervised this project frequently. There were three aspects monitored as the indicator of performance: physical, economic, and environmental/social aspects. The physical aspect consisted of, for instance, the physical achievement (length of road, number of bridge, etc.) and the quality of the infrastructure. Employment (such as man-days, total payment, etc.), number of beneficiaries, and effect on price or income level were included in economic aspect. Social aspect was assessed regarding to participation, villager contribution, and knowledge transfer, while environmental aspect was deemed as low impact. Moreover, comparison assessment from other locations and other types of interventions were also being conducted in order both to improve the implementation process and to expand the number of beneficiaries.

CHAPTER III

THE CONTRIBUTION OF INFRASTRUCTURE TO RURAL DEVELOPMENT

In general, this chapter will discuss the contribution of infrastructure to rural development. Two main sections will be presented. *The first* is to review briefly infrastructure contribution in general term and in other developing countries. Then, *the second* section is going to discuss its contribution specifically in Indonesia. To study its contribution in rural Indonesia, the case of the Village Infrastructure Project for Java (VIP) will be used.

3.1. INFRASTRUCTURE AND RURAL DEVELOPMENT

In general, how does infrastructure affect development? Infrastructure can contribute to development through two kinds of contribution, directly and indirectly (Jimenez, 1994). Infrastructure may affect the output of development directly, as a measurable final product. As an intermediate input, infrastructure enhances the development indirectly. In studying the contribution of infrastructure to rural development, this study will not too focus on the first view (not just see its contribution based on, for example, the length of road), rather on the intermediate role of infrastructure.

In a different way, Guild (1998) argues that infrastructure plays two essential roles in development. *Firstly*, infrastructure can become a catalyst to facilitate all elements of development to work efficiently, such as the use of labor, capital, and natural resources. Infrastructure investment can advance development by improving how market factors work. Infrastructure availability can also increase the productivity of development capital. *The second* is that infrastructure facility is one of inputs in development. In this role, infrastructure serves as a direct input to the development activity. In the development implementation, the distinction of both roles is not quit clear and is not opposed each other. “*Both of the theoretical approaches are consistent Better facilities and services are expected to promote regional development ...*” (Guild, 1998, p.6). Based on these two approaches, he formulates some implications of infrastructure on development (Table 4).

Table 4. Infrastructure Impacts on Development

Aspect	Impact on Development
Productivity	<ul style="list-style-type: none"> - increase output as a result of direct input and higher productivity - change structural and comparative cost through improved technology
Complements/ substitutes	<ul style="list-style-type: none"> - reduce costs of production and transactions through complementarity - increase productivity of other factors through complementarity
Location	<ul style="list-style-type: none"> - increase productive amenities attracting firms and consumption amenities attracting labor - induce private investment through lower costs and higher returns
Income	<ul style="list-style-type: none"> - increase higher wages through improved productivity - affect direct and multiplier effects of infrastructure construction wages
Access	<ul style="list-style-type: none"> - ease access to markets: cheaper inputs, higher output prices, and alternative employment - improve health, education, and social services due to better mobility and access
Consumption	<ul style="list-style-type: none"> - increase consumption value of infrastructure services - increase environmental improvement

Source: Guild, Robert L., 1998. p.8.

The discussion above is a general picture of infrastructure impacts on development. It gives us an understanding how infrastructure works in development. Usually, the impact is a positive one. In my opinion, we have to realize that each region has a specific characteristic; in this term, urban is not similar with rural. A type of infrastructure which has positive effect for urban does not always affect rural positively. What is needed for rural in a region is not always needed by rural in other regions. Before discussing the infrastructure contribution to Indonesian rural development (the next part), the rest of this part will review infrastructure contribution to rural development in other countries.

Referring to Chapter II, the discussion of these two parts will be divided into three main aspects (economic, social, and environmental). To make this discussion more systematic, each aspect will be categorized into some sub-headings. Poverty and income, market access, production and productivity, and others are the part of economic aspect. Moreover, social aspect will be divided into education, health, capacity building, and others. Finally, environmental aspect will be detailed into some facets: soil erosion, water availability, deforestation, and others.

It will be presented in the next part that some cases from some developing countries show that infrastructure affects rural development. Most of studies explore its economic impacts. Few researches focus directly on social aspect. And, we will also realize that the consideration of environmental aspect in rural infrastructure has

not being examined yet. Moreover, in aggregate infrastructure facilities provide some positive impacts for rural; but it should be recognized too that a specific facility does not affect significantly on a specific element. Some examples will be illustrated, for examples: water supply project in India has no influential effect on poverty reduction; the distribution of benefits of rural road project in Malaysia is not evenly; rural roads in Bangladesh did not give significant impact on rural education.

The next part will elaborate more about the contribution of infrastructure to rural development into three main aspects: economic, social and environmental. Each aspect will be detailed into some elements, as described in the theoretical framework part (Chapter II).

3.2.1. Economic Aspect

The discussion of economic contribution of rural infrastructure will be divided into three main parts: poverty and income, production/productivity and food, and market access. Hunger or food issue will be grouped with production/productivity issue because experiences from countries reviewed show that food and production aspect are related each other.

Poverty and Income. In rural India, for example, either income per capita of rural inhabitant or rural poverty incidence corresponds to infrastructure availability. Using a bundle of rural infrastructure (rural electricity, rural road, rural telecommunication, and rural water supply) as independent variables, the quantitative analysis by Bery *et al.* (2004) correlates between rural infrastructure availability and per capita income and rural poverty incidence. The result of this study shows that the deprivation of rural electricity, rural road, and rural telecommunication reduces income per capita in rural areas, but not for rural water supply facility. In the study area, rural water supply project does not correspond to rural income or rural poverty (Table 5). From this study, the maintenance of rural infrastructure is important that must be considered in advance. Public must analyze the capacity and continuity for public to keep the service level delivered by infrastructure.

Table 5. The Correlations of per Capita Income and Rural Poverty with Infrastructure Deficiency in Rural India

Rural Infrastructure	Per Capita Income	Rural Poverty
Rural Roads	-0.68	0.62
Rural Telecommunication	-0.44	0.66
Rural Electricity	-0.75	0.93
Rural Water Supply	-0.14	0.03
Overall	-0.77	0.83

Source: Bery *et al.*, 2004, Figure VI and Figure VIII, p.18-19

The recent study by Khandker *et al.* (2006) analyzes the impact of two rural projects (the Rural Development Project and the Rural Roads and Markets Improvement and Maintenance Project) on rural poverty and welfare. The finding of this study shows that rural households gain more savings by 36-38 per cent because of transport cost reduction and the decreasing of fertilizer price by 5 per cent. In overall, they conclude that a poverty reduction contributed by these projects is about 5-7 per cent.

Focusing on household economies in Bangladesh, the empirical study by Ahmed and Mahabub (1990) shows that transportation and rural road has the contributions to alleviate poverty by indirectly generating income. Rural road affects agricultural production by reducing the price of agricultural inputs and lowering the labor costs. Rural income generation is also as implication of the non agricultural job creation. Moreover, in average, savings of household increases, but only by the top two income deciles. The result of research done by Songco (2002) also reveals that irrigation project may reduce the incidence of absolute poverty in rural Bangladesh.

Water and sanitation project in rural Thailand has different impact on rural income, compared to India case. Rural irrigation project in northern Thailand proves that rural communities get income from its construction. They can work for this project during off-farming season. The increasing of rural income is also stimulated by the promotion of higher-value commodities and the increasing of agricultural productivity (Jimenez, 1994). In the future, it is expected that the economic opportunities will come as a result of water accessibility, for example tourism and restaurant.

Based on two rural road cases in Malaysia, Windle and Cramb (1997) analyze the economic impact of rural road. This study concludes that rural road provides some economic impacts for the rural people by creating off-farm employment and increasing household income from export crop; farmers can trade their production to market. Table 6 presents that the proportion of export crop is higher in Layar Village which has a better road accessibility than Padawan Village does. The important note from this study is that the benefit from rural road is not distributed evenly. People who can access road which links to the center have higher benefits.

Table 6. The Proportion of Household Income (%) in Rural Malaysia

Income Component	Layar Village	Padawan Village
Export crops	55	20
Food crops	26	39
Farming wage	9	24
Remittance (money sent by their family working in city)	3	11
Forest products	5	3
Home production	2	3

Source: Windle and Cramb (1997), p. 49, Table 3.

Production/productivity and food. Related to agricultural production and productivity, one of studies is being done by van de Walle (1996). He studies some benefits of irrigation project for farmers in Vietnam. It is very obvious actually because water is a vital input of cultivation. Better irrigation network determines crop that can be cultivated by farmers. Better water irrigation also widens the opportunity of farmers to utilize their dry land.

The contribution of infrastructure to production is also reported by Songco (2002). His research shows that a rural electrification project in rural India can promote the use of electrical irrigation pumps. Farming or cultivation activity has not depended on rainfall again. In turn, the use of electrical pumps it leads to the increasing of their agricultural production and productivity. Moreover, farmers have also an opportunity to choose commodities which have more added-value.

Different finding is revealed by Windle and Cramb (1007) who study the impact of rural roads in two villages in Malaysia. They highlight that farmers in alongside road tend to change their cultivation from food crop to other higher value crop. Better road accessibility makes buying food from other area more reasonable.

Market Access. In Vietman, there was a rural road rehabilitation project. This project covered two provinces. Based on OED evaluation (*in* Jimenez, 1994), this project has initiated the reducing of costs of goods in rural areas. Because of the improvement of rural road, the price of goods in rural areas is becoming similar with it is in the center.

3.2.2. Social Aspect

This part will discuss the social contribution of rural infrastructure development. The discussion will be divided into two main groups: education and health, and capacity building. Education and health are in one discussion because this study has not found many literatures on those issues.

Education and Health. Not only does the water and sanitation project in northern Thailand give positive economic impacts for rural communities, but also it affects the social condition of rural life. UNICEF report (*in* Jimenez, 1994) emphasizes some positive aspects of this project. The water and sanitation facilities contribute to the improvement of health and schooling sector in rural areas.

In Bangladesh case, social impact of rural infrastructure has been explored by (Ahmed and Mahabub, 1990). This study shows that infrastructure has a positive effect on rural health, but not in rural literacy. By categorizing villages into two groups (developed and underdeveloped), it is found that there is no different significantly of the educational distribution of chi-square value in both group areas.

Capacity building. With regards to rural knowledge and skill, a certain study which sees has not been found yet. Probably, in other countries, the maintenance of

infrastructure is the responsibility of government, not community so that there is no such training and extension for villagers. In the case of VIP, we will experience other capacity building impacts, which are decentralization, accountability and transparency.

The literature directly discussed social impact of infrastructure in rural development is not many. It does not mean that social impact is avoided mostly. Rather, I argue that some social impacts, such as education and health, are not directly influenced by infrastructure. Infrastructure affects social condition through influencing economic condition first. Especially in term of capacity building, encouraging people participation, improving knowledge, and supporting decentralization process are still new consideration nowadays. The study of those aspects is few, but it will grow in the future.

3.2.3. Environmental Aspect

The experiences of rural infrastructure development from some developing countries do not focus yet on the environmental contribution of rural infrastructure. That is why this part merges all environmental aspect into one discussion (erosion, water availability, deforestation, and land use change). In the case of VIP, later, this study will find some contributions of rural infrastructure on rural environmental condition.

Erosion, water availability, deforestation, and land use change. The literature studied about environmental impact caused by infrastructure development in rural areas in developing countries is not easy to be found. Mostly, the discussion of rural infrastructure development is related to economic benefits and few about social impacts. In my opinion, it may be assumed that rural areas do still have much space for environmental interest so that it will be not significant to build infrastructure there. I do not have enough data yet to support this opinion, but what is important is to test this argumentation. Further research needs to be done in this issue.

In developed countries, the environmental value has been considered in infrastructure development (Nieker and Voogd, 1999). Some measurements, such as Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA)⁶, have been established to maintain the environmental interests in all infrastructure developments. Developed countries realize that if environment is not retained, they will not have open space for environment in the future because more land will be taken by infrastructure development. Nowadays, the perspective in synergizing environment and infrastructure changes from measuring the impact of

⁶ Environmental Impact Assessment (EIA) is “an instrument for planning and decision-making, oriented to the provision and evaluation of information about the environmental effects of development proposals and decisions with the aim at improving planning and decision-making” (Arts, in Linden and Voogd, 2004), while Strategic Environmental Assessment (SEA) is a similar tool with similar goal but it is implemented in planning, program, and policy level.

infrastructure to environment towards measuring the effect of environment to infrastructure (Koeleman, *et al.*, 2005).

The experiences from other developing Asian countries also show that there is no a certain pattern that a certain facility affects rural development on a certain aspect. Another finding is that infrastructure facility in rural areas does not always give a positive contribution to rural development; some shortcomings are also experienced.

After reviewing some contributions of rural infrastructure in other country cases, the next section will depict its contribution in Indonesia case. The next discussion is also employed the same structure of the previous part (economic, social, and environmental aspects).

3.2. THE CONTRIBUTION OF INFRASTRUCTURE FACILITIES TO RURAL DEVELOPMENT: VIP CASE IN INDONESIA

This part will be based on some reports and article which describe and discuss VIP case. The description of VIP has already been presented in the last part of Chapter II. The analysis of this part is going to utilize the framework formulated in Chapter II. Three main aspects (economic, social, and environment) are the focuses of this part (see the framework in Table 2). The discussion is to describe VIP contribution to rural development and, then, to make critical comments based on the fact and other academic insights.

3.2.1. Economic Aspect

VIP has contributed to economic aspects, such as poverty and income, food, market access, and production/productivity, in rural Java. Utilizing the framework in Table 2, this part will discuss each contribution. Moreover, other issues will be added in this part, which are the financial management issue and the economic regional impact of VIP case.

Poverty and Income. VIP was the poor-targeted project. One of the project objectives is to accelerate poverty reduction. The selection of the poor villages has been presented in the second chapter. Compared to other targeted programs, such as the Kecamatan Development Project (KDP), the World Bank (2006) claims that “more funds would reach the poor villagers.” Moreover, VIP project was the small-scale infrastructure development in rural areas. The visible direct contribution of this project is the provision of infrastructure for rural people. After VIP had been

extended⁷, more rural infrastructures can be provided⁸, more than twice than the original planned (The World Bank, 2006).

Based on those facts, the indicator of beneficiary was only the number of poor village covered by this project. It is true that more funds and more rural areas received the infrastructure provision, but the distribution of benefits among villager groups or income groups was not being studied. In aggregate, it could be observable that this project contributes positively to the rural economic. But, the distribution of beneficiary those who gets the most benefits of this project is not yet analyzed, whether the poorest or the middle class or the rich of the villagers. The distribution of beneficiaries is important to be researched. The cases of rural roads in Malaysia (Windle and Cramb (1997) and in Bangladesh (Ahmed and Mahabub (1990) shown this phenomenon. If this data is not explored, then the objective of accelerating poverty reduction is still being questioned to be reached.

One of VIP features is its labor-intensive scheme. The labor-intensive scheme had been chosen due to the short of job opportunities in that time. Laborers had been the rural residents within and from the surrounding project areas; they were paid in cash. This project can provide about 25 million workdays for rural people (or in average 25 days per person employed). There were some 2.8 million people working in this project (The World Bank, 2006). Therefore, VIP had high absorptive capacity to implement labor-intensive work. In addition, with regard to the rural income, farming can not be done in dry season so that they had not had another income in that period. Off-farm economic activities were not also available enough. Considering this fact, VIP had been agreed to be implemented during dry season when rural people is not employed in their farming activities. By working in this project, they will be paid in cash of Rp 2,000 – Rp 3,000 per day. Their income increased directly due to that wage during the project construction.

The increasing of main source of income from this project had been from the wage during its implementation. The job opportunity for rural people was also only considered during its construction stage. Those income and employment impacts are just short-term contributions. In the middle or long-term, rural poorest or landless farmers do not have a certainty to have a higher fixed income. There is no warranted that the poorest can access the new economic opportunities encouraged by this project. Usually the higher rural class can gain more benefits than lower income group.

⁷ VIP was extended by widening the coverage areas and by offering more infrastructures. This was possible because of the tremendous change of dollar exchange rate in that time.

⁸ During the first phase, VIP built 3,680 kilometers of rural roads; 7,790 meters of rural bridges; 2,427 water system units; 1,230 communal sanitation units; and 2 rural piers (OED, 2001). After extension, the infrastructure provision became some 15,069 kilometers of rural roads; 42,5 kilometers of rural bridges; 4,9 kilometers of piers; 8,722 communal water supply units; 4,877 sanitation units; 140 irrigation systems; 58 rural markets; and 84 other types of infrastructures.

The World Bank (2006) convinces us that direct labor cost in this activity had counted some of 20-50 per cent. Although this project had been guided by Project Manual (formulated by Ministry of Public Works) in its construction, the World Bank realizes that cost per unit of construction was lower than the standard government-funded project about 20-30 per cent. Using more labor caused the quality of infrastructure built low (OED, 2001; Sara and Katz, 1998). Just after 5 years, the field assessment of infrastructure in 2000 by the World Bank found that about 7 per cent infrastructure was deficient.

Lack of quality is not only due to the lower costs of its construction, but also caused by the lack of post-construction maintenance. Sara and Katz (1998) research found that operation and maintenance of VIP is low, counting 4.94 point of scale of 10. Based on its project plan, the villagers must carry out the maintenance of infrastructure in their own area. What can we learn from this fact? In the one side, it was argued that this scheme can encourage the rural participation because the infrastructure gives benefits for them. It was also expected that the inhabitant's maintenance can keep the sustainability of this infrastructure. But, in the other side, by offering the maintenance to the rural people, they have more burdens to do it. The rural people are generally poor so that villager does not have enough financial capacity to maintain their own infrastructure.

At the end, OED (2001) convinces us that this project can contribute to the improvement of the rural welfare in the ten years up to 1999. This fact is argued based on a 10-15 per cent fall in the proportion of poor households⁹.

Food/hunger. Although most of rural income was to fulfill food, the contribution of VIP to this was not reported. Hunger is also one of vital indicators of MDGs, but this aspect was missing in the VIP evaluation. There is no argumentation or information to explain it or I have not yet found any data about this issue.

Market Access. In turn, the provision of some infrastructures in the project areas leads to the fulfillment of some rural needs. In economic aspect, because of rural roads, rural mobility and accessibility does not depend so heavily on dry season again. Before rural roads were asphalted, transportation was either impossible or costly in rainy season. Based on this connection improvement, the rate of return of this project was high, about 20 per cent. The improvement of rural roads can also both widen the transportation mode --not only two-wheeled or three-wheeled transportations-- and reduce transportation costs. Market access becomes easier and less costly. The World Bank (2006) claims the reduction of commodity transport prices is up to 40 per cent.

⁹ This fact is presented in the paper "Indonesia: Consultation with the Poor" (in OED number 205, 2001) by Poverty Groups of the World Bank in the Global Synthesis Workshop, September 22-23, 1999.

Regarding to the poor, I call again the need to pay attention on beneficiary distribution which was not being explored in this project. Most of rural poor are farmers. Their activity is mainly in farming activity. The use of transportation, in my opinion, goes for trader. Rural trader gain benefit from transport cost reduction more than farmer does. Making sure this insight needs the empirical study.

Production and productivity. The World Bank report (2006) does not give any data about agricultural production and productivity due to this project. There is no argumentation why this aspect was not taken into consideration of this report. Another research was done by Hussain *et al.* (2006) in Central Java and Yogyakarta. This study shows that irrigation system can increase the paddy production in the project area. But, in more general picture, the productivity of paddy increased inconsiderably by 0.70 per cent during 1995-2000 in Java; but, its productivity decreased by 0.26 per cent (Pasandaran and Zuliasri, 2001 *in* Hussain *et al.*, 2006).

Others. In deeper study of water supply sub project, Sara and Katz (1998) conclude that the financial management of VIP is very low (0.09 point of scale of 10). There are four notes from them regarding to this issue in this sub project: there is no designated individual in charge of managing funds, there is no or very low tariff collection for operating the system, there is low savings generated to cover the maintenance, and collection rates are very low. In the long term, this fact gives us more insight that it will be not sustainable if the rural people are fully responsible for the maintenance of rural infrastructure.

From regional development point of view, regional economic gains some positive influences, such as inter-village linkages, market improvement, new economic opportunities, and so forth. Because the implementation of VIP was decentralized to the subdistrict and village levels and the district or local government was by passed, it could be happened whether this project had been synergic and integrated with other local government programs or not. There is no a specific study focusing on whether VIP was integrated with other district developments or VIP was only a fragmented project for poor village.

3.2.2. Social Aspect

Education, health, and capacity building issues are parts of social contribution of rural infrastructure (Table 2). In this part, all issues are analyzed. Due to the lack of information about education and health contribution of VIP, both issues are merged. While, some capacity building actions are witnessed in VIP case.

Education and Health. The World Bank reports (1996; 2006) only indicated qualitative information about the impact of VIP on rural education and health. It was stated that rural people can easier and cheaper visit to health and educational facilities. Water and sanitation unit provided the villagers public facilities to improve

their health standard. In the long term, it is expected that the health and education level of the rural people can increase.

Infrastructure facilities built in VIP were not directly related to education and health. There was no school or subdistrict health center delivered in this project. That is why some positive contributions of this project in these aspects was quite difficult to be evaluated, only some qualitative indications. Another possibility is that it should need more time to evaluate these effects.

Capacity Building. VIP was aiming at supporting decentralization process as a government program in that time. This political idea was implemented by transferring the funds directly to the subdistrict and village level. The prior infrastructure project had been conducted under the national control as the *Instruksi Presiden* (President Decree). It was hoped that delivering fund directly to subdistrict can reduce the corruption incidence. Moreover, local community could had a chance to choose an appropriate type of infrastructure. They can also decide in what service level that infrastructure will be built. In this project, the rural people had an opportunity to choose their own option (Sara and Katz, 1998). Their options will be examined by the Head of Subdistrict accompanied by the field engineers. There is an improvement of power devolution to the subdistrict and the community.

It had been discussed above that this project made a significant progress with decentralization and community participation at subdistrict and village levels. Based on the World Bank evaluation (2006) what was being questioned was “how far this project supported the decentralization in district level”. Both in financial, administrative, and knowledge aspects, the district level did not much involved in the decision-making. Funding was directly transferred to the village. Training of technical and administrative skills was performed in the village and subdistrict levels. The power to decide and examine the type of infrastructure was in the subdistrict level. Therefore, the decentralization and capacity building in district level was not much taken into consideration.

Avoiding district role in this project had another negative consequence. Infrastructure was carried-over from project management to the community so that there was no legal responsibility of the local government to operate and maintain this project. Moreover, the communities did not have rights to ask for the local government to support the maintenance.

The investment chosen had been decentralized to the community. This was the social mechanism to enhance public participation in infrastructure project. It was hoped that intensive discussion occurred at village level to discuss and decide what they needed communally. In their village meetings, they can discuss and select the type of infrastructure being built, the level of technology used, and the service level being provided. The World Bank (1995) claims that VIP is a community-driven development project. As well, VIP was the first project in Indonesia in which it

publicized planned and actual expenditures at community level. Every rural inhabitant can know the financial flow of the project in their area. It is hoped that this way can promote accountability and transparency of public activities.

As the initiators, the World Bank and the Government believe that community chose their own option of infrastructure. They were the initiator of their own infrastructure. An interview study (Sara and Katz, 1998) finds the different finding. In one side, village leaders and field engineers said that this project was initiated by community; in other side, most households felt that the initiator of this project was government. OED report (2001) also finds the similar finding above in which “choosing roads and bridges are more villages chief and/or field engineers than residents.” This fact explains why most villages proposed roads and bridges rather than other facilities.

Sara and Katz (1998) propose two possibilities of this phenomenon. *The first* is that socialization process of this project might not running properly. The information from village leaders to community was not flowing well. *Secondly*, decision was more in the hand of village leaders and field engineers. This fact also explains that village leader’s opinion does not always represent what resident voices. Another side could be a cause of this phenomenon, which is the villager. As already known, their education and skill capacity are relatively low so that they can not or does not want to try to involve in decision-making or discussion. In the time when job opportunity was very limited, villagers will tend to receive what their leaders and government offer.

Capacity building at community level was not only being considered in term of either participation process or financial issue, but also included the improvement of knowledge, technical, and administrative skills (the World Bank, 1995 and 1996). In this project, there was a special budget allocation to train the field engineers and the inhabitant how to do the construction. This project also offered some technical training for the residents to maintain the infrastructure because at the end the maintenance of infrastructure built will be left to their own responsibilities.

The weakness of participation process is being revealed by the World Bank report (2006). The early assessment only deemed community participation from villager’s attendance in meetings and their involvement as laborers. In the field, most of discussion participants were dominated by men; women were rarely attended in every meeting. The limited women’s participation was due to their behavior. This report also shows that the poorer was unlikely to participate in village discussion. They thought that their opinions were not taken into account. Although this project tried to encourage community participation, it was still limited for women and the poorer.

Another limitation was also witnessed in technical and knowledge capacity building. Referring to Sara and Katz (1998) analysis on the water sub projects,

training were being given more for the rural committees rather than for the households. Only 5 per cent of households had chance to follow this training, compared to some 11 per cent of rural water committee who were trained. For this reason, this study concludes that this project did not pay much attention to empowering and training communities. Or, in other word, the distributional effect of capacity building was not equal.

Finally, considering the discussion above, what is concluded by the World Bank (2006) that institutional development impact in this project is substantial is still being questioned. Many lesson-learned should be taken into consideration in building rural infrastructure facility.

3.2.3. Ecological Aspect

Some environmental impacts can be found in the VIP case: water availability, soil erosion, land use change, and deforestation. Those issues are presented in Table 2; and, they are discussed one by one in this part.

Water availability. It is easy to comprehend that the provision of water system contributes positively to the environment in the project areas. Water supply for vegetative does not depend on the rainfall anymore (the World Bank, 2006). Even, trees can grow in dry season. Water circulation is also going better. In such level, this project had a beneficial environmental effect.

Soil erosion. The World Bank (2006) reports that soil erosion alongside both rural roads and irrigation system was not significant because from the beginning the design of infrastructure had incorporated the environmental guideline established by Ministry of Public Works. The implementation of this guideline was done by the field engineers who verified every project's compliance during construction supervision.

Although soil erosion was small, what was missed in this evaluation is the accumulation of that small impact. This project covered wide rural areas. The accumulation of erosion from all rural roads was not being considered. The accumulation of small negative impact can be considerable impact in total. Moreover, lack of quality and lack of maintenance could make the disruption of soil becoming higher and faster.

Land Use. Because this project was the small-scale development, the World Bank also claims that there was not much space used in its implementation. This project did not change land use arrangement notably. Small scale project is also manageable in term of environmental issue. The World Bank (1996) also believes that deciding to build the small-scale infrastructure has also another positive feature. Unlike big infrastructure project, the small infrastructure did not need much space. It was expected that less land needed can avoid resettlement or there will be no

physical displacement that can suffer the rural poor. Therefore, this project was supposed to have a little disruption on land use.

An important thing is not that this project only needed small land, but the location where the infrastructure was built. Since infrastructure is constructed in land which has a high environmental value, it is projected that environmental quality will degraded. With regard to this project, there is no study which researches the locational aspect related to environmental impact. This issue was not considered yet in this project.

Another notion can be raised. To stimulate our insight on this issue, the increasing of land rent caused by this project can be taken as a starting point. The World Bank (2006) reports that VIP leads to the increasing of land rent in the project areas. In some studies, it is proven that land rent is one of some factors causing land conversion (from open space or agriculture to non agriculture) in rural Java. Landowners tend to convert their land use towards a higher land use. Or they tend to sell their land to other owners; in turn new owners will convert the land into non agricultural purposes. This process causes the decreasing of open space or agricultural areas. Consequently, environmental purpose will be destructed. Based on his analysis of land conversion in Northern West Java, Firman (1996) also concludes that uncontrolled and rapid land conversion in this region seems to have negative impact on environmental quality.

While the World Bank reports (1995 and 1996) indicate a little or insignificant negative ecological impacts of this project, it was stated in its project guideline that there was no environmental impact assessment being prepared up front. This statement adds another argumentation that negative ecological impact of this project has not yet been studied broadly and deeply. Because environmental impact takes time, another possibility of it might be that negative environmental impact of this project has not been visible yet.

Deforestation. Chomitz and Charles (1996) do not review VIP; they study the deforestation in volcanic mountains in Java. This study highlights that deforestation is going faster in volcanic mountains over time. The writers indicate that further study is needed to prove that the upgrading and extending rural roads will accelerate deforestation. I agree with this insight that better accessibility in remote areas can make cutting trees activity becoming easier.

CHAPTER IV

PLANNING FOR RURAL INFRASTRUCTURE DEVELOPMENT

The prior chapter analyzes the infrastructure contributions to rural development. Although some shortcomings are clear, the rural infrastructure can provide significant positive impacts for rural development. In turn, this chapter will go further to analyze how to plan rural infrastructure. Considering both negative experiences and positive impacts which are presented in the previous chapter is needed in this discussion. Rural infrastructure planning should also recognize rural characteristic. Thus, *the first* part of this chapter will discuss rural characteristics. Some notions in planning level of rural infrastructure development, then, are going to be formulated in *the second* part. The discussion in this chapter will refer to the theoretical framework of rural infrastructure development planning in Chapter II, in which rural infrastructure planning is based on rural characteristics, the role of stakeholders and the type of infrastructure facilities.

4.1. RURAL CHARACTERISTICS

Rural areas are figured by specific features which is different with urban areas. The development of rural infrastructure facility should be adjusted to the physical, economic, and social aspects of rural. This part will use those elements to discuss rural features both in general and Java context.

4.1.1. General Rural Characteristics

Defining rural is not a simple task. Rural sectors are dynamic; it is going to change dynamically adjusted by the context in which the alteration process is taking place. Some recognize rural as a sector in development (for example in the structural change theory); some deem it as a certain area (for example the territorial approach of rural development). In a simple idea, but meaningful, Guttenberg (*in* Hite, 1997) comprehends rural as the adverse of urban; “rural is what is not urban”. In this section, I am not going to discuss about rural or rurality definitions. Rather, because of the scope and objective of this study, I tend to focus on the characteristics of rural.

In my opinion, rural infrastructure development should consider the context in which this facility is going to be built. Therefore, our understanding of rural features will be very useful to guide the next discussion, which is the relationship between rural characteristics and rural infrastructure facilities. To ease the discussion of rural characteristics, this literature review will be grouped into three categories: physical, economic, and social characteristics.

Physically, rural has specific features. The following are several physical characteristics of rural:

- a. It is impossible to ignore the existence of agriculture from rural characteristic. It is generally understood that the most human activity in rural areas or sectors is agricultural-related activities. Agricultural purpose or farming dominates rural activities.
- b. Rural areas have higher agricultural and natural resources (Ruben and Pender, 2004).
- c. Rural can also be characterized by its remoteness (Hite, 1997). This peripherality, distance from urban center, causes the low accessibility to the modernization development (Deavers, 1992).
- d. Rural is seen as less-favored areas because of its limitation access to public infrastructure (Ruben and Pender, 2004).

In term of social condition, rural has some common social figures. Some of them can be listed below:

- a. Population size in rural areas is smaller than urban areas (Bery, *et al.*, 2004). It does not mean that rural population is less than urban population, but rural population is spatially uneven distributed.
- b. The low population density, then, is another feature of rural (Deavers, 1992; Hite, 1997; Bery, *et al.*, 2004).
- c. The rural people quality is also low relatively. It can be measured by its illiteracy, skill level, mortality rate, and so forth.

Finally, economic characteristics of rural areas or sectors are many, such as the following:

- a. Most of poor people live in rural areas (Hite, 1997); their income per capita is relatively low (Bery, *et al.*, 2004).
- b. Because of their low accessibility to market and/or public services, the economic activity size in rural areas is small and specialized in a certain activity (Deavers, 1992; Hite, 1997; Rizov, 2005). Diversification of development activity is relatively limited.
- c. As a consequent of the previous point, although agriculture structures rural areas, we should realize that rural development is not only directed at a certain sector (Deavers, 1992). In the process of rural modernization, not only does agriculture sector play role in rural, but all sectors contribute to it.
- d. In regional context, rural economic specialization --not diverse-- makes rural areas vulnerable to trade shock (Krugman, 1991 and Barkley, 1995, *in* Rizov, 2005).

4.1.2. Rural Indonesian Characteristics

Although some features of rural are similar, rural condition varies. Each region has different geographical, economic, and social characteristics. This discussion will elaborate the characteristics of rural Indonesian, especially rural Java. Some are similar with general rural figures, but some are unique.

Physical characteristic. Land use in rural Java is dominated by agricultural purposes. Although this island is only 7 per cent of total land, the most parts of paddy field are located in Java. Compared to urban, rural areas also have higher natural resources, such as trees. Agricultural land use determines other community figures in rural Java, including either their economic activities or social characteristics.

Usually, the physical location of rural Java is far from center. It is not too easy to say whether the far distance from urban causes or is caused by its remoteness/peripherality. What is clear is that the remoteness of rural Java leads to the backwardness of its development. Development activity tends to focus in urban. Rural Java is less-favored areas relatively compared to urban Java.

In term of infrastructure provision, its availability in rural Java is still low. The rural road, for example, can not cover all areas; it is only 2.47 km of rural roads per km square of cultivable areas. Rural roads in some 21.84 per cent of total rural villages are not paved yet. Rural roads in more than half rural poor villages (65.79 per cent) are only the earth and gravel road. Moreover, the coverage of water supply is only some 11 per cent; more than 85 per cent of population in rural areas fulfill their drinking water by themselves or even have lack of water supply (OECD, 1994 in The World Bank, 1995).

Another characteristic is that the spatial location of village is diverged; they are not distributed evenly. Among village is not always close to each other. As well lower density relatively, the implication of this phenomenon is lower distribution of population. Geographical landscape might be another reason why unequal distribution of development and population occur.

Economic characteristic. Generally, since early 1990s macroeconomic indicators had shown the tendency of economic decreasing in Indonesia. In 1990, poverty incidence was some 27 million people or about 15 per cent of population; mostly are in rural areas. In 1995, disposable income was in average about \$1 per day. Rate unemployment in that time tended to increase.

In 1990, the population of Java was about 107 million. As describe before, the most population (55 per cent) is in Java even this island is only 7 per cent of total land. So, Java is the highest population density. Some 64 per cent of Java population still live in rural areas.

While the most population is concentrated in Java, the absolute poor people are also living in Java (49 per cent of the poor). In 1990, the absolute poor in Java

were some 9 million people. Most of them were in rural areas. Compared to rural areas in outside Java, the living costs in Java are higher relatively. What is more is that the wage in rural Java is less than that in urban.

With regard to land use, even though the most land is used for farming, nowadays, the competitiveness of agricultural purpose is decreasing over time. Rural community tends to convert their land to be non-agricultural use because the economic value of agricultural activity is less than others. Land conversion typifies rural Java land use. Up to now, this issue has been an unsolvable problem. Furthermore, another land-related problem is the ownership of land is very small. In average, every household only has 0.5 ha. This size is far enough to reach economic of scale. Relying income on agriculture can not fulfill their basic needs.

Compared to rural economic activities in outside Java, off-farm economic in rural Java is more developed but as not advanced as that in urban. The level of economic diversification is still limited relatively. Low accessibility to and availability of public service (such as market) and low labor skill might limit the development of off-farm activities.

There were about 18 thousands villages in Java in 1992. Some 33.2 per cent of them were classified as poor. This number counted about 29.23 per cent of total rural poor in Indonesia. Furthermore, 765 Java villages were extremely poor. They are normally located in remote areas which are difficult to be accessed. Regarding to the infrastructure deficiency, a study by OECD (1994, *in* The World Bank, 1996) give us a more detail description about the left-behind villages in Java as followed:

- a. Some 4,200 villages need to improve their access roads. Mostly, rural roads were not well developed. Due to heavy rains, difficult terrain and clayish soil in many location, many villages were cut off during the rainy season;
- b. About 500 villages did not have clean drinking water system. Most of them fulfilled their water supply from wells or natural water sources; and
- c. Some rural which had good economic potential had no market center.

National government did not enough funding to develop rural infrastructure. In 1995, the central budget allocation for rural infrastructure project was around Rp 240 billions; and this budget decreased in which it was only Rp 210 billions in 1996 (Parikesit, 2002).

Social characteristic. It is well known that basic needs in rural areas are not fulfilled properly yet. Public services are less available. Health condition is still low, such as high infant and maternal mortality and high prevalence of diseases. Due to their low income and lack of health facilities, villagers can not access easily to health services (The Government of Indonesia, 2004).

Moreover, education development is less-developed than urban, but it is better than rural in outside Java. The literacy level needs to be improved. Rural labor is unskilled relatively. They usually move to urban if they want to continue they

study or to get a better job in informal sector. It makes villages were occupied by older people. Based on his primary observation in several villages in Yogyakarta, Kim (2002) argues that “the majority of villagers are employed in the agricultural sector while the ratio of those working outside this sector gets higher as villagers are younger”.

In social behavior context, rural society has higher social interaction rather than urban which is more individual. Rural society is also attributed by their social control. Rural community or household knows each other. This social condition gives possibility for the character of shared poverty as studied by Geertz¹⁰. Rural people will help each other in dealing with other member’s problem, including in dealing with their communal issues. In term of communal needs, *gotong royong* (mutual and reciprocal assistance or collection action) is the cultural and social mechanism in rural Java (Bowen, 1986). Villagers contribute to develop their communal infrastructure or services together within this mechanism. The contribution of each member will be controlled socially by each other based on their social agreement (*musyawarah*).

In term of financial capacity, relying the maintenance cost of rural infrastructure on villagers can not be sustained. As we have known already, their income and welfare level is relatively low. There is a difficulty for rural community to maintain rural infrastructure. Central and local government has to take this condition into account in planning and developing rural public facilities.

In the government context, infrastructure development had been initiated mostly by central government. In doing so, there was a President Decree for this plan. Community did not have much chance to participate in this activity. In the implementation stage, for instance, government and company (contractors) played a vital position. Therefore, it is understandable that participation for community-funded infrastructure was low (Parikesit, 2002). Due to their cultural view, women participation is very limited in public services. If their husband is already involved, they either tend to not participate or limit their participation.

Parikesit (2002) also elaborates that government did not has enough institutional capacity for rural infrastructure development. Furthermore, he argues government has lack of attention to rural infrastructure facilities. The development of these facilities had still been based mostly on financial measurement. The importance of rural infrastructure had been negligible.

The development of rural infrastructure facility has to be adjusted to rural conditions. Consequently, it is a must to take the characteristics of rural areas and of rural infrastructure facilities into consideration. Rural areas are figured by specific

¹⁰ There are two intertwined concepts proposed by Geertz, involution and shared poverty. In more detail, they can be read in his book (Geertz, Clifford. 1963. *Agricultural Involution: The Process of Ecological Change in Indonesia*. Berkeley: University of California Press).

features as described before; a certain characteristic has implication for planning and developing infrastructure. In this issue, Bery *et al.* (2004) try to search some implications of rural characteristics on rural infrastructure development, as presented in Table 7.

Table 7. Rural Characteristic and Its Implication towards Infrastructure Development

RURAL CHARACTERISTIC	IMPLICATION
Low population size and density	This condition implies that the cost per capita of rural infrastructure is high relatively. We have to recognize that there is a great deal of differentiation among rural areas themselves; different area has different population size and density.
Low population density	Rural population is distributed separately. Distance among residential areas is far relatively. When the level of population agglomeration is small, the cost of infrastructure development is high. Technically, the farther the distance, the more losses of power distributed, for example in the case of electricity network.
Low per capita income	In the area where people's per capita income is low, the pricing of infrastructure services cannot be structured so as to recover the entire capital and operating cost. Government needs intervene to overcome the problems of infrastructure provision and cost recovery.

Source: Bery *et al.* (2004).

Based on Table 7, there is something contradiction. On the one hand, we realize that infrastructure is important contribution for rural development; but, on the other hand, considering the rural characteristics, investing public funding for rural infrastructure is not easy task. On the one side, the lack of infrastructure provision causes many obstacles for rural development; on the other side, rural infrastructure investment is more costly than that in urban areas.

4.2. PLANNING FOR RURAL INFRASTRUCTURE DEVELOPMENT

The literature reviewed above gives us an understanding of rural characteristics. Rural is different with urban. Rural characteristic varies among regions. We also realize that a certain characteristic will have a certain implication regarding to infrastructure development. Hence, rural infrastructure development should be planned, developed, and maintained properly. In the next part, this study tries to exercise how to plan rural infrastructure for rural Indonesia. There are three

main considerations proposed, which are the reason why paying attention to rural is needed, the role of stakeholders, and the type of infrastructure being built.

4.2.1. Convincing the Importance of Rural Sectors

It is a fact that the share of the rural sectors has decreased in term of economic development. This phenomenon can be explained by using the theory of modernization of economic development, such as the stages of growth developed by Rostow and/or the structural transformation advanced by Lewis and Chenery. These theories focus on the economic growth in the development process. Both believe that development should be shifted from traditional sector (rural and/or agricultural sectors which is characterized by low productivity) to modern sector (manufacturing and service economic). By improving investment and capital accumulation in modern sector, the growth of modern sector and its capacity to absorb labor force will increase (Todaro and Smith, 2003). The contribution of rural sectors to the development process will decrease; therefore, they suggest that resource allocation needs to be focused more on urban sectors.

This economic point of view leads to the perception that rural sectors are not important for development in the future. The World Bank (1997) reports that the priority for rural and agricultural sectors is not as high as it were in many countries. This organization identifies several reasons for this phenomenon. Because of the decreasing of agriculture sector over time and of the little political power of rural people in decision making process, agricultural role in some countries tends to decrease. Another explanation of this rural development ignorance is urged by de Janvry and Sadoulet (2002). They propose that the cause of the low priority for rural development is that the past rural development can not overcome the poverty problem. Urban bias, then, is as an observable fact of development in developing countries (Lipton, 1977).

While some highlight the decreasing of rural sectors, there is also adverse argumentation believing that the contribution of this sector is still essential. Johnston and Mellor (*in* Timmer, 1998) convince us that rural sectors contribute to development by increasing the food supply. In Indonesia context, the main task of rural development is to achieve and maintain domestic food security. Because most people consume rice, these sectors try to keep the paddy field exists and to increase rice production and productivity. Food security will significantly determine the stabilities of whole sectors, such as inflation, budget balance, and so forth.

Additionally, the growth of agriculture productivity in rural sector has major effects on economic growth. Gollin and Parente (2002) argue that agricultural productivity gives big direct impact on aggregate output. In Indonesia, rural is source of labor for industrial and services sectors in urban areas. Their wage level is low because they are less-killed and low educated people. Urban sectors get profit from

this. Furthermore, rural is big market for urban sectors; industrial output will be distributed to rural. Aggregate output will enhance by enlarging the market size for industrial output. Agricultural product export activity is another source of economic growth. Indonesia is an important exporter for rice, palm oil, and forest products.

Alleviating poverty and malnutrition needs the vital role of rural sectors (Thorbecke and van der Pluijm, 1993). Most of Indonesian poor people are located in rural areas. In 1996, 68% of the poor are rural families; and in 1998, this percentage increased to be 72% (Table 8). In 2004, Government of Indonesia projected that about 69% of rural people were living below the poverty line. Since most poor people are villagers, rural development can not be neglected.

Table 8. The Number and the Percentage of the Poor, Indonesia, 1996-1998

Location	1996		1998	
	million	%	million	%
Urban	7.2	32.0	9.6	27.8
Rural	15.3	68.0	24.9	72.2

Source: The Government of Indonesia, 2004, p. 28.

Not only in term of economic is rural sectors significance on development, but also related to their role in social and ecological aspects. Comparing to the environmental condition in urban areas, rural areas have a special advantage. The specific amenity can attract many people for living in rural areas. Cloke and Park (1984 *in* Cloke, 2006) argue that rural culture is a way of life, which is characterized by the socio-behavioral qualities of its society.

Commuter and rural-urban migration is common in Indonesia. For migrants, urban is a place to mainly get income; they still keep their family in their hometown. Speare (1981) elaborates that three main reasons rural people move to urban are to get a job, to continue their school, and to accompany other family members.

The prevalence of underweight children in rural is slightly higher than that in urban. In 2002, this prevalence in rural is about 29.2% while in urban is around 24.6% (The Government of Indonesia, 2004). The discrepancy between rural and urban is wider with regard to the proportion of births attended by skilled health personnel. Based on those data, it can be concluded that the condition of other health aspects, such as maternal health situation, malaria, TBC, and so forth, are as not good as those in urban areas. Generally speaking, health condition in rural areas is worse than it is in urban areas.

Nowadays, agriculture as the core activity in rural sectors is considered by its multi-functionality. Agricultural land is not only being considered of having agricultural production function, but also it maintains the quality of nature, its

environmental function. In globalization era, some believe that these agriculture multi-functions revitalize agricultural significance (Knickel and Renting, 2000; Vatn, 2002).

De Janvry and Sadoulet (2003), with regards to MDGs, argue that paying attention to rural development is important. The reason of it is not because of the positive side of rural sectors, but because of the fact that the most development problems are embedded in rural areas. Compared to urban condition, rural sectors have a lot of development issues, such as poverty, child and maternal mortality, illiteracy, and the like. That is why government has to pay more attention to rural development. Otherwise, development will neglect most of development problems.

In this case, I agree with what de Janvry and Sadoulet (2003) argue. The significances of rural sectors is not only related to its positive contributions on development, but also related to facts that the most of development problems are embedded in rural areas/sectors as described above. Rural sectors/areas consist of both the most of natural potentials and the most of development problems as well. Generally speaking, by recognizing both aspects, indeed, rural is still important and has vital role in development. Consequently, infrastructure development must both take rural infrastructure into consideration and cover rural areas. Realizing that rural is important sector in development is a starting point in paying more attention to rural infrastructure development.

Convincing public that rural need to be taken into account in development planning and implementation is a big task. It is not an easy one. All those who concern and involve in rural development have a big challenge in doing so. They have to work together so that rural will not be neglected in development process. Information and research on this issue should be encouraged.

After convincing public that rural is needed to be developed, then we are going to infrastructure development approach. Cook (1991) proposes that there are two approaches in infrastructure development planning: growth-oriented infrastructure development and human needs infrastructure development.

- a) *The first* is mainly aimed at supporting and facilitating the modern sector. Rural infrastructure is developed in order to stimulate economic activity in rural areas or sectors. Indeed, economic consideration (for example economic cost benefit analysis, economic rate of return, etc.) is more emphasized in this approach.
- b) *The second* is to make the services of basic human needs available and affordable for rural people. In this approach, rural infrastructure facilities are aiming at increasing rural living standards.

Rural economic is not yet developed as advanced as urban. Even though rural have abundant natural resources, this potential is not being explored properly. Rural characteristics, such as low skilled and educated inhabitant and infrastructure

deficiency, can not support yet the diversification of their economic potential. Other characteristics, such as low density and dispersed population distribution, make rural infrastructure development costly to be delivered in a certain area. Public infrastructure budget tends to be allocated in a region in which this infrastructure can give higher economic return and needs less cost.

Moreover, rural have a lot of problems. Poverty, illiteracy, malnutrition, mortality prevalence, and so forth are more concentrated in rural areas. The level of their well-being can be lifted by providing their basic needs. If the provision of their basic needs is not both available and affordable for villagers, rural will always left-behind.

In my opinion, considering those approaches and based on rural condition, the provision of human basic needs is more important basis of rural infrastructure development than the consideration of economic improvement. Health, poverty, education and so forth are basic needs that must be delivered by public investment. The public intention and attention to provide basic human needs have to become the first consideration for rural infrastructure development planning, not economic reason. In this approach, the insight of rural infrastructure development is to provide basic human needs. Rural basic needs are not available and affordable yet, so rural infrastructure should be prioritized in development planning. My argumentation is compliance with Timmer's opinion. He points out that "the most important task of government is to worry about the many dimensions of equity..." (Timmer, 1998 in Eicher and Staatz, 1998, p.548).¹¹

4.2.2. Recognizing and Involving Stakeholders

Rural infrastructure development is not only the task of government. All stakeholders have involved. They have different interest, capacity, and role. This part will elaborate three main stakeholders: government (central and local), private sector, and community.

The rural infrastructure development should be based ideally on what villagers need or want. As already discussed, rural people have limitations to voice their interest. They do not have enough capacity and opportunity to involve in decision-making process. As a result, it is difficult to see the initiation of rural infrastructure coming from community. In this context, as a representative of public, government must exercise this initiation in advance. Coordinated and mutual rural infrastructure planning should be exercised first not to decide it from the top but to provide informed choices for community. Government should offer informed choices, not open choice, to community. Open choices can lead into the cost of

¹¹ Equity (*pemerataan*) is one of three development trilogies in Indonesia. The other two are economic growth (*pertumbuhan*) and stability (*stabilitas*). Timmer believes that government has more concerned on economic growth and economic stability.

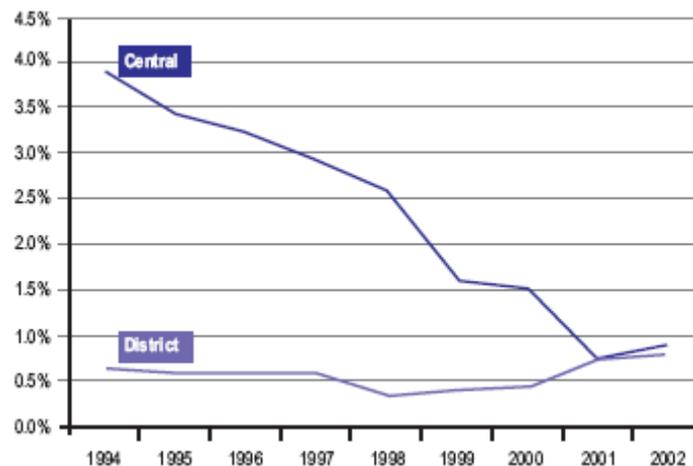
participation. On one side, participation is ideal for the development; but on the other side, participation will need time, energy, and intellectual capacity (Bouwman, 2005). The case of VIP gives us another variable of participation which is cultural aspect. Low participation of rural women is due to their behavior not to involve in rural meetings if their husband has already participated. Government intention and attention is vital as a starting point of public to offer informed choice for community.

For the private sectors, information and option is important. Based on the information, private sectors will examine their economic opportunities to involve in rural infrastructure development. Due to the lack of government budget, infrastructure development in rural areas needs private investment. But, in my opinion, it will be less interest for private to invest in rural infrastructure development. Low rural income, low population density, and low population size make rural infrastructure development has less attractiveness for private sectors. Consequently, letting rural infrastructure development to private sector will not run well. Public investment will still take important role in it.

Information and option is also important for villagers. Because of their lack of knowledge and capacity, villagers do not know what they need. They do not realize yet what kind of infrastructure they need to be built in their village. Although participation had been accompanied by other capacity building activities (training, meetings, and discussion), but the case of VIP shows that some weaknesses are still witnessed, such as the domination of villager leader, men, and field engineer. Encouraging local discussion and extension, for instance, should be facilitated by government. When government does not involve in this process, local decision is still be relied on their local leader.

Since 1999, public management has been decentralized to the local government. Local government should play a main role in rural infrastructure, in planning stage as well as in budget allocation. District level has to involve in all development activities, including the initiation process. District level can not be bypassed because they have to synergize all development activities in their region.

In term of infrastructure spending in Indonesia, although the share of local government tends to increase, but it is still low or about 0.9 per cent of GDP in 2002 (Figure 4). In the future, it is hoped local government will have enough budget capacity. Due to low economic attractiveness of rural for private sectors, a shared funding mechanism between local and central government can be an alternative to finance rural infrastructure development. This possibility can be exercised in order to overcome budget shortage, as well as to enhance the sense of belonging and the responsibility of local government for rural infrastructure development.



Source: The World Bank, 2004, Figure 6, p.11.

Figure 4. The Government Expenditure for Infrastructure Development in Indonesia (as a percentage of GDP)

Rural community has also developmental potential. Their culture, such as *gotong royong*, can be encouraged to enhance the villager participation to infrastructure development. Their social control can be a good mechanism to organize villager's involvement. They can also improve their local unique accountability and transparency scheme.

The discussion above leads us to some apprehensions. We realize that rural infrastructure development can not be relied only on central government- or private-funded mechanism. Based on the VIP experiences, we know that central government played important role; local government did not have much involvement; private sector had involved only as a contractor. What I propose in this context is to exercise another mechanism in which central government, local government, and community can share their contribution to development rural infrastructure, a government-community partnership. In this scheme, shared-contribution is needed to overcome the shortage of public investment¹². This contribution is also a mechanism in which all agencies have sense of belonging and responsibility to develop and maintain rural infrastructure. The proportion of contribution varies depending on each capacity and mutual agreement.

4.2.3. Choosing the Type of Rural Infrastructure

There are two things being discussed in this section, which are the scale of infrastructure development and the type of infrastructure. The former will exercise whether large or small scale which is more reasonable for rural areas. And, the last will discuss network or point type of infrastructure in rural areas.

¹² The trend of overcoming the lack of infrastructure investment is privatization (Kessides, 2004). In the context of rural infrastructure development, I argue that this scheme does not work properly.

Large or small scale development. VIP was implemented in small-scale sub-projects. Based on this case, there are some positive sides. The economic rate of returns of this project was feasible so that financially building rural infrastructure is beneficial. Moreover, rural Indonesian is characterized by low density and low population size relatively. The level of infrastructure they need is the capacity of infrastructure that is accordance with their density and population as the user. Large infrastructure facility will be wasted and inefficient. Small scale infrastructure is also more manageable. With their low capability and capacity, rural community can not operate and maintain such large infrastructure. Another aspect is due to the lack of public investment for rural infrastructure, small scale rural infrastructure project is more realistic. Based on this experience, I argue that small-scale infrastructure scheme is more reasonable than large scale for rural areas.

Network or point infrastructure. Normally, infrastructure provision in a certain area is developed as the continuation process of the existing infrastructure in adjacent area. And, usually urban area is the first area that is provided by infrastructure development; started from urban areas then extended to rural areas. Within this pattern, the infrastructure provision in remote area is not sensible because this area is far away from surrounding. Such infrastructure follows this network pattern of infrastructure, for instances electricity, cable telecommunication, piped water system, road, and so forth.

Another type is point type of infrastructure. Such infrastructure facility is not in network pattern, but independently operating. Telecommunication is not in cable network, but satellite connection. Micro-hydro electricity can be acknowledged as point type of infrastructure. Drinking water from communal well is not connected with their neighborhood water system.

In Indonesia case, the poor villages are usually located in remote area. Their spatial distribution of village is also fragmented, dispersed spatially. Based on this condition, it is reasonable if rural infrastructure provision is developed in point type. Each area has their own infrastructure system which is not depended on other surrounding areas. Public can promote this infrastructure type by utilizing local village potential, mostly their own natural endowment. Rural electricity can be developed by promoting hydro-electricity. Satellite connection is deemed more suitable to encourage rural telecommunication rather than fixed line. This rural type of infrastructure can become local-served facility.

CHAPTER V CONCLUSION

This last chapter highlights some conclusions that can be drawn and being framed to answer the research questions. Rural infrastructure development has positive contributions, and we have to realize that there are some shortcomings that have to be considered. Some research findings are also concluded in this chapter. Finally, some considerations in planning rural infrastructure development and further studies are recommended.

5.1. CONCLUSION

Nowadays, rural areas and sectors still play important role in Java. This importance is not only due to high natural endowments of rural areas, but also because most developmental problems are embedded in rural areas, such as poverty incidence, low income, education and health problems. Therefore, public concern should pay more attention for rural areas. Since rural development is neglected, then, most development problems are going to be unsolvable.

Based on the VIP case, rural infrastructure can contribute to rural development. In economic aspect, rural infrastructure development gives direct job opportunity for the poor. During the construction, they can get another income as a laborer in this project. The availability of irrigation system provides farmers to increase their crop indices and to cultivate higher value commodity. In turn, agricultural production will increase. Villagers also receive better market access in all season. In the future, rural infrastructure can increase the diversification of rural economic activity. Moreover, in social context, villagers can access health and education center easier and less costly. Community capacity building is also encouraged; villager has opportunity to discuss and participate in public activities. The skill and knowledge of rural inhabitants are improved through training and socialization. Finally, better water availability delivered by rural irrigation provides more vegetative to grow. It is hoped that ecological quality can be better.

There are also some shortcomings of VIP implementation. Some lessons can be learned from this project. In economic aspect, food security impact was not considered yet although in the context of rural Java, food expenditure takes the most of rural household income. Another weakness is that the distribution of benefit should be taken into account otherwise rural infrastructure project gives more benefits for medium-high income groups. They are commonly not poor farmers. The reduction of transportation cost, for instance, will benefit for rural trader more rather

than farmers. Furthermore, in social aspect, decentralization process in this activity is questioned. While government regulation decentralizes power to local or district level, VIPs avoided and bypassed local government. Participation process was still dominated by men; the participation of women still limited. The role of local leaders is significant in making decision; their voice does not always represent what villagers need or want. Capacity building process also needs to be improved in the future. Environmentally, it is not valid that this small-scale project does not have negative ecological impact. What was being revealed is that erosion is not significant. The accumulation of insignificant negative effects is not studied. In the future, because of lack of quality and maintenance, negative environmental effect should be researched.

Rural areas have different characteristics compared to urban areas. Physically, poor rural village in Java is commonly located in remote areas which have lack of accessibility. The population density and size of rural areas are low relatively. The location of poor village is not near by each other, but separated. In economic aspect, rural inhabitant has low income, especially for small and landless farmers. Most of the poor are farmers who live in rural areas. Although economic diversification is getting higher, farming dominates rural sectors. In social characteristic, the level of knowledge, skill, and health or rural areas are low relatively, as described before. Regarding to this fact, rural community participation is a long term process in rural development. The provision of basic needs for rural area is still a big development problem. Rural social capital can be encouraged for rural development. *Gotong royong* is a good social mechanism for rural community to contribute to rural infrastructure development. Rural characteristics must be taken into account in rural infrastructure development.

While many studies have reviewed and analyzed rural infrastructure development issue, this study has some specific findings:

- the cost of participation needs to be taken into account;
- informed and evaluated choice for rural community is better than open option; and
- environmental assessment is not only applied for large infrastructure development, but also for small rural infrastructure development.

5.2. RECOMMENDATION

Convincing public that rural areas need to be prioritized is the first step of planning rural infrastructure development. The reason is not only due to the abundant natural endowment of rural areas, but also because most developmental problems are embedded in rural areas. The consideration to prioritize rural infrastructure development is more to provide human basic needs rather than economic reason.

Government (local and central level) must become the initiator for public interest of paying more attention for rural infrastructure development.

Rural community participation is important, but due to their lack of knowledge capacity, socio-cultural behavior, and the cost of participation, informed and evaluated choice is better than open option. This approach must be accompanied by capacity building actions for rural community and local government.

The empowerment for local government is also important because the recent political policy is decentralization to district level. Involving local government from the beginning must be encouraged.

This study indicates that rural infrastructure might have negative impact for environment. Based on the experiences from some developing countries and VIP case, environmental consideration is still neglected. In the future, ex-ante and ex-post environmental assessment must be conducted in all scale of rural infrastructure development.

Since the economic attractiveness of poor village is low for private sector, public investment to develop rural infrastructure is still vital. As a representative of public, government must coordinate local-central budget and bilateral-multilateral funding to be allocated for rural infrastructure development. Furthermore, rural community has high interest and some local potential to have infrastructure facility in their own village. Therefore, government-community partnership can be exercised as another alternative besides government-led or public-private partnership for rural infrastructure development.

Finally, small-scale development is more financially and economically reasonable. This scale of activity is also manageable relatively. Regarding the rural characteristics, the local-served infrastructure type is more suitable for rural infrastructure development. The combination between small-scale development and local-served infrastructure type is workable in this case.

In order to improve the understanding of rural infrastructure development, this study calls for some further researches:

- Especially in developing countries and Indonesian context, quantitative analysis covering all three aspects of infrastructure contribution is needed to reveal whether or not building rural infrastructure is more worth than urban infrastructure.
- The scope of this study is about hard infrastructure for rural development. Further study on soft and institutional infrastructure for rural development can advance this study.
- Decentralization to local government is a fundamental change in Indonesian development. Does local government put the priority of building rural infrastructure more important? After decentralization, are the operation, rehabilitation, and maintenance of rural infrastructure better than before?

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