

**ROAD INFRASTRUCTURE DEVELOPMENT TO
ALLEVIATE POVERTY IN RURAL HIGHLAND
AGRICULTURAL AREAS**

THE CASE OF WONOSOBO REGENCY

Master thesis

A thesis submitted in partial fulfillment of the requirements for the Master Degree from the Institut Teknologi Bandung and the Master Degree from the University of Groningen

By:

M. ARIF SETIAWAN

ITB: 25410074

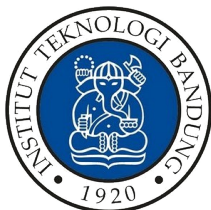
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AND

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By:

**M. ARIF SETIAWAN
ITB: 25410074
RuG: S2130475**

Double Master Degree Programme

Development Planning and Infrastructure Management
Department of Regional and City Planning
Institut Teknologi Bandung

and

Environmental and Infrastructure Planning
Faculty of Spatial Sciences
University of Groningen

Approved
Supervisors
Date: August, 2012

Supervisor I

Supervisor II

(dr. J. R. Beaumont)

(Heru Purboyo Hidayat P., Ir., DEA, Dr.)

Abstract

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M. ARIF SETIAWAN

ITB: 25410074

RuG: S2130475

Poverty is a crucial problem that is significantly related to economic development policy and the living need fulfillment. At the rural level, many serious challenges faced by people living in Wonosobo regency. Instead of natural factor conditions such extreme topography and crop pests and disease, poor rural people have also limited access to capital and productive land, lack adequate physical and social infrastructure and have insufficient access to services and information. However, since most of rural people who live in this region are engaged with commercial farming activity, the factor of accessibility and the availability of decent road infrastructure connecting with other region as well as to the market are the key factor.

On one hand, poor condition of road infrastructure and limited accessibility will lead to increasing of cost of transportation; decrease the possibility to use high quality inputs; limit the access of markets to the sell their produces and the purchase of consumer goods. On another hand, improper condition of road infrastructure will become a constraint to access other life supporting infrastructures such as health facilities, social services or good education facilities.

The aim of this thesis is to clarify the significance of rural road infrastructure development to support poverty alleviation trough improving the rural accessibility, specifically in rural highland area of Wonosobo regency. With the help of theoretical framework of planning theory and planning literature and many similar cases throughout the world, I will explore on how the availability of decent road infrastructure will increase the accessibility of rural highland agricultural area of Wonosobo regency to markets and finally increasing the rural poor income.

Keywords: *Rural road infrastructure, poverty alleviation, accessibility of rural agriculture area, rural poor income, Wonosobo Regency*

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Preface

Poverty is a fundamental barrier for the development among many nations. The poor condition prohibits many individuals, families or even societies to live properly within a concept of welfare. Poverty is such of a life threatening. Poverty is closely related to the limited access to infrastructure. In this case the physical isolation that cause poverty problem along with the lack of supporting facilities and infrastructure such as unpaved roads or damaged roads, which apparently, experienced by most of poor people and communities in Wonosobo Regency.

The key factor of poverty reduction here is the solution in which it can focus directly to the problem of rural poverty by creating wealth and jobs in the villages. It need solution that would give the villagers a practical alternative instead of migrating to the city. It would give them a chance to survive and prosper without uprooting themselves.

To encompass such condition and alleviate rural poverty, theory has demonstrated that rural road infrastructure development is a solution for poor community in rural area with and low level welfare. Descent infrastructure will affect to the increase in per capita income as well as its multiplier effect in improving job opportunity and reduce poverty significantly. Therefore this research will focus on the development of road infrastructure and its influence on the social end economic aspects of rural poor communities in Wonosobo.

I realize that it is imposible to conducting research without any support. Above all else I would like to devote my biggest gratitude to ALLAH SWT for the strength and power to finally finishing master program. Forthermore,I would like to express my appreciation to dr. J. R. Beaumont, Heru Purboyo Hidayat P., Ir., DEA, Dr. and Prof. Johan Woltjer for guiding me during research and writing thesis..

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ITB and RuG. Last but not least, I give my great respect to the family of DD ITB 2010 for togetherness, my deepest appreciation for Ira Ariani my “partner in crime” who always help and encourage me and for ndan Eprem and Kang Wiwit for being there for me when the storm was came. I would like to express my thankfulness to all people who have supported me wherever they are.

Finally, I would like to dedicate this thesis for my son “Muhammad Arya Fahrezy Al’afgani” and for his future sister “Gendhis” for being my sunshine.

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Groningen
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Abbreviations

IDT	: <i>Inpres Desa Tertinggal</i> (Presidential Instruction on Lack-behind Villages)
PRA	: Participatory Rural Appraisal
PPK	: <i>Peningkatan Penanggulangan Kemiskinan</i> (Poverty Reduction Improvement)
RPJMD	: <i>Rencana Pembangunan Jangka Menengah Daerah</i> (Local Development Policy and Planning)
SNPK	: <i>Strategi Nasional Pengentasan Kemiskinan</i> (National Strategic of Poverty Alleviation)

Chapter I Introduction

This chapter introduces this research in brief by explaining about the purpose of the research, the background why this topic was chosen, problem statement and research question to be addressed, the approach and significance of the thesis. Discussing about classical and current study of poverty and infrastructure development, this chapter is closed by the illustration of the structure on how it is presented.

1.1. Research Objective

The main purpose of this research is determining to what extent the development of rural road infrastructure will affect the rural welfare by increasing income of the rural poor or more specifically, the influence of road infrastructure development program to alleviate poverty in rural highland areas of Wonosobo Regency. By knowing this, it is expected to be a consideration for planning strategy to poverty alleviation in Wonosobo.

This research focuses on the development of road infrastructure and its influence on the social and economic aspects of rural poor communities in Wonosobo. With the support of academic theoretical consideration of planning theories and past references from similar study ever conducted such as Jones (1984) in Thailand, Gachassin (2010) in Cameroon, Escobar in Peru, and Van de Walle (2002) in Vietnam, this research explores poverty alleviation from the view of basic needs fulfillment of rural poor communities, especially the provision of infrastructure. To enrich the perspective of the research, many research findings on economic growth are also employed as a reference to explore the significance of infrastructure development.

1.2. Background and Rationale

Poverty is mainly a fundamental obstacle to the realization of human development. Living in poverty circumstances preclude individuals, families and communities to live more dignified (Dendy et al., 2004). This point of view about the poverty emerge from a rights-based approach in which recognizes that poor people have basic rights equally with other community members (Boesen, 2007). Even though Poverty is a problem that is very closely related to economic development policy, understanding Poverty is no longer limited to the economics inability, but also to the failure of basic rights fulfillment (failure to prevail their standar necessity) and different way of treating for a person or group of persons to live a life with dignity (Hamid, 2008).

In fact, poverty should be seen in both broader and more specific horizons. Broader perspective meaning that poverty is not only for most obvious reason of because certain individuals are poorer than other, but also not having the same opportunity to access minimum or basic material to live decently. It is merely failure to fulfilled basic need with their capabilities (Sen, 1985). In the Indonesia National Poverty Reduction Strategy document, it is stated that poverty as a multidimensional problem where poverty is not only measured by income, but also include the vulnerability and insecurity of people or a group of people to be poor included the limited access of the poor to the key infrastructure.

According to the same document, the existing poverty in Indonesia closely related to low level of education and public health level, absorption of labor that is not balanced with the availability of jobs, lack of infrastructure accessibility to and from the source of the regional economy, rural and urban disparities, inequality in land ownership, community culture, the low purchasing power, low levels of economic growth and a prolonged economic crisis.

In contrary with broader one, specific perspective should also considered if we want to understand poverty comprehensively. More specific understanding of poverty just like argued by Nolan and Whelan (1996) should be taken into account since too broad definition of poverty can lead into the danger of losing sight of the distinctive 'core notion of poverty'. Furthermore, Nolan and Whelan propose the notion of

poverty as the inability to participate in society due to lack of resources. This definition implies that poverty is closely related with financial aspect.

However, until recent day, the problems of low income is still a major cause for poverty problem. Calculation base on the criteria of poor people with daily income less than 1 dollar established by The World Bank, then the number of poor people in Indonesia in 2007 was 29.4%. Of that number almost 65% are poor people living in rural areas (UNDP World Development Report, 2009). This implies that poverty reduction must focus on rural areas.

Dyson (2007) has described that rural poverty is actualy one of the main problem face by the modern world. It points out that the lack of jobs and economic opportunities in villages severe urbanization drives. This continuing urbanization causes Immense social and environmental problems. That indeed effects of poverty are most visible in the cities, but the causes of poverty lie mostly in the villages.

Ironically, until recently, poverty was often viewed and associated with urbanization, mass immigration, and industrialization that is why attention for poverty was primarily given to urban poverty (Wilson and Aponte, 1985). This neglecting of rural poverty has led to the fact that we often failed to cope with poverty in many level. It was purely because we understand poverty incompletely only limited to the advanced, industrialized, capitalist, and urbanized society (Tickamyer and Duncan,1990).

Giving the magnitude of such problem, poverty is recognised to be more complex. Therefore to alleviate the problem, it imply more far-reaching poverty reduction strategies (Brandt in Townsend, 1993). The key factor of poverty reduction here is the solution in which it can focus directly to the problem of rural poverty by creating wealth and jobs in the villages. It need solution that would give the villagers a practical alternative instead of migrating to the city. It would give them a chance to survive and prosper without uprooting themselves.

In Wonosobo Regency level, the problem of poverty by more or less similar to the opinions of Dyson (2007) and Howe and Richards (1984) in where they argue that limited access to infrastructure will lead towards isolation. In this case the physical isolation that cause poverty problem along with the lack of supporting facilities and

infrastructure such as unpaved roads or damaged roads, which apparently, experienced by most of poor people and communities in Wonosobo regency causing more expensive transportation. Lack of and the limited availability of other infrastructure such as education also causes difficulties to poor communities to develop human resources. Physical isolation is also caused by long distances from the central district or city resulting in less access to information. The condition is worsen by the fact that those area are located in extrem topographical region of the mountain slope.

Given such situation, the significance of rural road infrastructure development to poverty alleviation is discussed thoroughly, specifically in rural highland area of Wonosobo regency using literature study method. With the help of theoretical framework of planning theory and planning literature and many similar cases throughout the world, exploration on how the availability of descent road infrastructure influences the accessibility of rural highland agricultural area is performed throughout this research. The scope is focused on the influence of road to the accessibility of Wonosobo regency to markets and the welfare of the rural poor income.

1.3. Problem Statement

Until now, it is generally believed that low accessibility to basic infrastructure and to markets is two of the crucial factors causing poverty, thus infrastructure development will directly affect economic conditions. To what extent the availability of infrastructure in local level will affect to the pace of poverty alleviation program held by the government is also obvious. Limited access will directly affect the poor people's income in rural areas as what is said by Yao (2003) that the rural poor's lack of access to product and factor markets leaves them largely bypassed by the growth process. However, in the case of rural area with specific extrem topography such as in the slope of mountain just like particular part of Wonosobo Regency, it still need further explanation.

Unfortunately, in Indonesia, the facts has indicated that the development policy which embraces the development system of tricle-down effect it less advantageous

for the rural areas. Today, a system of development which focuses on growth center areas, hoping that this area will trigger the growth in surrounding areas, has become the source of difficulty for the government. Instead of posing trickle down effect as expected, this development system creating the backwash effect where the rural areas around growth center facing depleted natural resources and human resources. On the other hand, the distribution of development including the development of infrastructure never reach rural areas. Experience shows that the poor disproportionately miss out on the benefits of infrastructure projects.

According to Howe and Richards (1984), rural poverty is closely related to the limited access to basic infrastructure especially road infrastructure. Unavailability of adequate road infrastructure, will deter the poor in rural areas towards the center of the regional economy as well as market or other economic resources. While Orabourne (2008) stated that the inadequate roads and poor road access will force poor people to bear the burden of high transportation costs, reduce ability to use an access to high quality inputs; limit the uses of local markets to the sales of their produces, the purchase of consumer goods and opportunities for off-farm employment.

Furthermore, poor road access is also an obstacle for the poor people in rural area to obtain other important facilities such as education and health service. In education sector for example, poor acces will limit them to get high education which until now could only be gained in urban areas. Not surprisingly, the education level of rural communities is lower compared to urban communities. So does in the health sector, efforts to maintain the health of poor people are also hampered by poor access to good quality basic health services. Distance and cost are the main factors that determine the accessibility of the poor to health services. Therefore, it seems that development of rural roads infrastructure facilities is the way that can be taken so that rural communities can get the opportunity to participate in economic activities and directly will alleviate them from poverty.

What matters here is how the relation between the development of rural road infrastructure in Wonosobo regency to the problem of poverty in the area, who are mostly engage with high land agriculture activity. Whether it is true or not that developing the road infrastructure will directly improve rural accessibility and agricultural welfare for rural poor people or at least reduce the number of poor

people in rural high land areas in Wonosobo. These problem is the background for this research on poverty and infrastructure.

1.4. Research Questions

To achieve the research objective, two central research questions are addressed as stated in the following:

1. To what extent the relation between the development of rural road infrastructure in Wonosobo regency and the problem of poverty in this high land agriculture activity area?
2. Does developing the road infrastructure will directly improve welfare for rural poor people or at least reduce the number of poor people in rural high land areas in Wonosobo?

1.5. Research Approach and Significance

For the local level of Wonosobo Regency specifically for the government, this research is intended to provide source of consideration concerning rural road development and its role on poverty alleviation program in Wonosobo Regency. This aspect is so important as we already know that the road infrastructure provision and development in rural communities is such a complicated task therefore it requires careful planning.

In term of academic and scientific knowledge, the research on the topic of poverty and infrastructure is plentiful, in contrary for specific rural highland area, the research still limited, even in international literature. Hence for enriching the theoretical knowledge and the importance to implement in practical world, the topic of significance of infrastructure development to alleviate poverty in rural highland area is studied.

This research can also be used as one of the reference in providing input for local governments in determining the appropriate poverty alleviation program as well as

the possible implementation in other regions in Indonesia with the similar characteristic of rural agriculture highland area.

The approach applied in this research is elaborating the development of infrastructure from two different perspectives of rural income and rural highland economic growth that assists toward the objectiveness of a research. By doing so, it is useful to give deeper insight regarding infrastructure development. It means that not only determining the direct impact of the development (increasing income), but also the indirect impact of development to the poor (supporting economic growth).

1.6. Outline of Report

The study report for this rural road infrastructure development and poverty alleviation research will consist of 5 consecutive chapters. It will be presented systematically so that it can be comprehended easily and coherently. Each chapter will be discussed thoroughly according to scientific method while still maintaining its conciseness.

The first chapter is the "*Introduction*". In this chapter, background of research, research problems and research question are presented to explain why this research is necessary to be done. Research objectives, as well as research significance and the selected approach are presented to clarify the purpose and how we can use the findings of the research. Here in the first part, the outline of report will also be presented to illustrate on how the research and the report will be done systematically.

The second chapter is "*Theoretical Review*". This chapter explains about literature review exploring some theories related to rural road infrastructure provision and development, some conceptual theories of accessibility and theory of rural poor people. Concept of poverty alleviation program is presented as reference for developing the whole idea of the research.

The third chapter is "*Research Methodology*" implemented in this thesis. Here, research framework of literature study, supporting theories required, other similar findings as well as data analysis from previous research and research scope area are

explained briefly. Basically, in this chapter try to illustrate on how selected research methodology is applied as main framework in order to making proper analyze.

The fourth chapter is "*Study of Rural Road Infrastructure Development and Poverty Alleviation in Rural Highland Area of Wonosobo Regency*". This chapter reviews the study area of rural agriculture highland area and all correlating aspects of the research. This chapter also presents data and finding gained from literature study to determine appropriate variables and describe specific methods that is applied in analysis accordingly to study area. Once It then followed by evaluates the significance of the rural road infrastructure development in accelerating the poverty alleviation by analyzing the increase in the income of the poor people in highland rural as well as analyzing the improvement in economy growth of Wonosobo Regency and finally answers the research problem presented in Chapter 1.

The thesis is closed with the last chapter of "*Conclusions and Recommendations*". This last chapter presents and describes the result finding as the conclusion of the research in where it is proposed as recommendation. In the end, it can determine the role and contribution of rural road infrastructure in accelerating poverty alleviation program.

Chapter II Theoretical Framework

This chapter discusses about relationship between poverty alleviation and rural infrastructure development as well as the definition and how to measure of poverty are explored. It mainly discusses the correlation of poverty and poverty alleviation and the connection of poverty and rural road infrastructure development which is assumed by many development theorists as a solution for poor community in rural area with disadvantageous economic opportunity and low level welfare (Bryceson, 2006) and the accessibility aspect in rural area where were always regarded as the cause for social and economic marginalization for rural poor.

2.1. Poverty and how to measure poverty

Poverty fundamentally not just the usual problems of poverty which is presented through the number and percentage of poor people (Greeley, 1994). Poverty is arguably multidimensional phenomenon (Tomlinson, 2007) that has a strong local character and experienced differently on many context. The fact that poverty has specific characteristics has urge a change in perspective of comprehending as well as an approach to understanding poverty. This strategy is also required to develop accountable and transparent policy to eradicate poverty which is applicable in the political arena of local autonomy and decentralization (such as in Indonesia) and to achieve a good governance (Eberley, 2007). This kind of strategy could only executed through comprehensive approach to the poor and the inclusion of the poor's perspective in policy analysis and formulation of poverty reduction strategies.

To begin with, basically there are to two general definitions of poverty that used widely to illustrate such deprived condition. The first definition of poverty was

introduced by United Nation through UN Statement which was signed by the heads of all UN agencies in June 1998. In this document, poverty is defined as

" denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and cloth a family, not having a school or clinic to go to, not having the land on which to grow one's food or a job to earn one's living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living on marginal or fragile environments, without access to clean water or sanitation" (UN, 1998)

The second definition proposed by The World Bank (2008) that defines poverty almost the same as the previous terminology

"deprivation in well-being, and comprises many dimensions. It includes low incomes and the inability to acquire the basic goods and services necessary for survival with dignity. Poverty also encompasses low levels of health and education, poor access to clean water and sanitation, inadequate physical security, lack of voice, and insufficient capacity and opportunity to better one's life" (The World Bank, 2008).

Both definition put much attention to poor access and limited opportunity in social and economic situation to live in dignity or at least in basic level. Meaning that those two factors are regarded closely related to the poverty. These definitions imply that poverty can be described in so many different ways (JICA, 2011). Many believe that poverty should be stated in obvious way such as level or numbers so that it can be easily quantified, while others believe that poverty should be expressed in a broad and sophisticated definition. Hence to bridge this debate, in dealing with poverty, today many social and economic experts try to elaborate two specific definitions of poverty, namely *absolute poverty* and *relative poverty* (Bourgignon, 1999).

Absolute poverty, the definition first coined in the late nineteenth and early twentieth century by Charles Booth and Seebohm Rowntree, the pioneers of modern poverty research. Both argue that poverty were supposed to be understood in such an absolute way as lacking enough money to fulfill basic need or minimum necessities of merely physical efficiency (Rowntree, 1901). Here poverty is referred to the capacity for subsistence survives including the physical capacity for production as well as reproduction (Lister, 2004). Poverty is then translate into a set of standard which might be implemented globally such as standard of poverty proposed by The World Bank (2008) for *extreme poverty* definition as living on less

than US\$ 1.25 per day, and *moderate poverty* as less than US\$ 2 or US\$ 5 a day. This way, poverty is a matter of living below a certain income threshold for individual or the number of households which is unable to afford certain basic goods and services (The World Bank, 2008).

Relative poverty, a definition introduced by Peter Townsend (1979) said that individuals, families and groups in the population can be categorized in poverty level if they fail to obtain the types of diet, fail to participate in the activities due to its limited or lower resource compare to average in certain society. This individual or household have living conditions and amenities just below the standard or customary approved in the societies to which they belong (Townsend, 1979). Basically, this definition is closely relates to social context in which it might be different throughout many society. In different terminology, relative poverty assume that people are in poverty when they fall behind, by more than a certain degree, from the average income and life style enjoyed by the rest of the society in which one lives (Bellù and Liberati, 2005).

In addition, instead of those two categorizations above, there is still one definition remain. According to Njeru (2005), there are a group of people who are regarded as a poor just because they see themselves as poor due to the low self-esteem even though they have surpass the minimum living standard of the day. This kind of poverty is closely related to relative poverty or specifically called as *subjective poverty*, the kind of poverty that resembles subjective feeling of certain individual or groups.

From the illustration above, we can draw a redline that to explore poverty from the notions of poor access and limited opportunity we should refer to economic and social indicator of the poverty. These two different indicators can describe poverty from two distinctive way. Economic indicator might give more quantifiable description than the social one. Nevertheless, even though certain social indicators like social benefits, easier acces to health and education facilities, time saving and improved information can be implemented to know the poverty level, economic indicator has been widely known as the most obvious and tangible indicator to describe poverty adequately (Lombard, 2007). Indicator such as increased income, productivity gain, employment or even better income distribution can be used to

illustrate the level of poverty in certain society and then describe it in measurable number.

Furthermore, to measure poverty basically we can use both quantitative and qualitative approaches. According to Oraboune (2008), quantitative method can be executed through several methodologies including an income-based approach poverty measurement, consumption-based approach of individual income, absolute and relative definition of poverty, or even using simple poverty lines approach (based on minimum food necessity) as well as the more comprehensive one which based on higher line of measurement including provision of non-food necessity. These methods can be carried out to indicate poverty in more tangible way (Mwabu, 2005). Meanwhile, to measure poverty in qualitative way, it require involvement of the poor and the inclusion of the poor perspective in analysis and formulation of poverty measurement. It can be done by accomodating the ideas and aspiration of them who defined as poor or at least considered to be poor (Novkovska, 1997). This way, we can understand poverty from the point of view and from the experience of poor people. Nevertheless, since it purely base on subjective idea and perception of the subject (poor community), it will lead to diverse and specific definition of poverty with local community oriented characteristic. Hence to understand poverty comprehensively, we should combine those two approaches of qualitative and quantitative.

Looking further to the notion of poverty, as argued by Tomlinson (2007) and OECD (2001), it is getting more obvious that poverty is *multidimensional problem*. It encompasses deprivation in many aspects, not only closely relate with human capability to fulfill consumption and food security, it also ranging vastly from decent work, low income, limited assets, difficulties in accessing health and education facilities, legal right inequality up until low living security. Combined together, these factors will create such as an acute poverty. It is completely beyond only income measures.

In term of geographical, poverty has no boundary. Not only concentrated in Asia or Africa where these place always be linked with poor living condition, poverty also cuts across continent with a multifaceted dimensions such as natural, physical, economic, social and even psychological (Narayan et al., 2000). Nevertheless, the incidence of poverty has larger probability to be happened in poor and developing

countries rather than in more developed ones. According to Elijah (2007), this incidence of severe poverty in developing and transition countries is closely associated with unstable economy high unemployment and corruption rates. Meanwhile, in wealthy and more developed countries, poverty is often related with social exclusion and psychological deprivation, the typical problem of relative poverty. Those diverse factors will directly affect the incidence and size of deprivation, making almost different from one country to another.

Regarding the relation of poverty and social exclusion, up until recently, there still debate and intense argumentation on whether the development have positive impact on poverty or not. On one hand, many structuralists argue that the economic and welfare level of certain nation can describe the level of poverty (Flotten, 2006). Therefore, they believe that economic growth will affect positively to poverty and social exclusion (Dollar and Kraay, 2001). On the other hand, many also believe that especially in developed countries economic growth is the one of factor to creating poverty. Here, poverty is regarded as direct consequence of economic growth and development (Okun, 1975)

In Indonesian context, the debate of poverty, inequality, social exclusion and even injustice and economic growth has also been brought to another level, policy and development. Among other dilemmas that often discussed, it has been dominated by a doubt on economic growth ability to reduce inequality of income distribution and poverty, whether economic growth can benefit extensively for the whole group in society especially the poor or not, is there a positive correlation between economic growth with the improvement of living standards of the community; whether there trade-off between pro-growth policies and pro-poverty policies and finally is a pro-growth can also be expected to be the best policy for poverty reduction (Agusalim, 2011).

Meanwhile, in general understanding, poverty has been broadly defined in so many ways. For example, Shorris (2000) has defined that poverty involve many dimensions of daily experience such as lack of money to attain current need, lack of proper education, inadequate housing, unsafe living and working conditions, as well as unsatisfactory social life. BPS or Indonesian Bureau of Statistic (2003) has defined poverty as the condition of deprivation experienced by the individual or household so that they fail to fulfill their minimum living necessity. In addition, BPS

also proposed the concept of poverty line as indicator of minimum consumption expenditure to fulfill the basic needs.

2.2. Poverty and the effort to end poverty

Poverty is actually has been recognized as a fundamental barrier for the development among many nations. The poor condition prohibits many individuals, families or even societies to life properly within a concept of welfare. Poverty is such of a life threatening. Living in poverty meaning that one live with the condition of not having enough food and enough clean water (Lotter, 2007). This condition includes limited access to healthcare and education. In many cases, it even involves lacking of adequate shelter (The World Bank, 2007).

In Indonesia, during the period of increasing wealth along the development and introducing new technology condition in the end of 20th century, the gap between poor and rich has grown wider. The situation gets worse after the economic crises in Asia on 1997 when the people living in poverty showed a significant increase. The number of poor people is alarming; for instance, in 2009 statistic has show that 31.02 million of Indonesia people still lived on less than a dollar a day (BPS, 2009).

Recently, according to Presidential decree No. 54/2005 on Poverty Alleviation, poverty has been declared officially as problem which has to be solved together by all elements of government, community and private institution in almost all level of local, regional and national. In international level, anti-poverty program even can be traced back ever since the end of the second world war and has become so embraced in 1960's when John F. Kennedy declared "The Development Decade" followed by his successor Lyndon B. Johnson through what so called "Unconditional War on Poverty" (Myrdal, 1970).

In the national level, the effort to alleviate or reduce poverty has been proposed systematically in 1993 through the program of "*Peningkatan Penanggulangan Kemiskinan*" (PPK) or Poverty Reduction Improvement program, known as "*Inpres Desa Tertinggal* (IDT) or Presidential Instruction on Lack-behind Villages and later on 2005's document of "*Strategi Nasional Pengentasan Kemiskinan*" (SNPK) or National Strategic of Poverty Alleviation. These documents underlined poverty alleviation are huge obligation of government as a main development agents,

community and private institution. Reducing poverty is a strategic policy, important, and comprehensive, which should be taken by the government whose primary responsibilities for implementing the economic development, social and welfare for all people.

Furthermore, poverty in terms of planning is not just a problem that commonly expressed through the number and percentage of poor people. The phenomenon of poverty is believed to be multidimensional not only measured by income, but also include the vulnerability of individual or community to be poor, and limited access of the poor in the determining of public policy that that has direct impact on their lives (Eberlei, 2007).

Here, poverty is viewed not only as an obstacle or a target that must be eliminated, but also must be integrated into the analysis to achieve development goals (UNECA, 2007). In addition, poverty has a strong local characteristic (Blank, 2005). This specific local characteristic of poverty required shift in perspective and approach to understand poverty. This strategic effort is also needed in seeking alternative development policies to reduce poverty significantly through the involvement of the poor and the inclusion of the perspective of the poor in policy analysis (Bonfiglioli, 2003). The involvement of the poor is also needed in formulating the most appropriate poverty reduction strategies (SNPK, 2005). This means that poverty should be considered spatially to become the more comprehensive framework for poverty alleviation where local characteristics such as social aspects and environment factors accommodated (Supriatna, 2000). Thus, *specific poverty indicators* are important to be formulated in advance as a reference and guidance toward poverty reduction policies.

2.3. Poverty and rural road infrastructure

According to the WHO, poverty is defined identical to them who have income per person per day below US\$ 1. By referring to this definition, the correlation between poverty and the availability of infrastructure cannot be easily seen. However, if poverty is looked into more depth through the fulfillment of basic live necessity as well as other supporting need, this link can be comprehended thoroughly. Here, the poor societies will be very difficult to break out of poverty if they are still living in an

environment with less availability of basic needs. These problems include insufficient food and nutrition, limited access to clean water, descent health and unavailable education facilities. They lived in the neighborhood that does not surpass the standard health requirements. This meant that all effort to reduce poverty would be difficult to be executed when they are still living in such worst conditions where the entire deficiency is still trapping them.

Regarding that concern, therefore poverty should be interpreted in broader term. Included in this understanding is limited food supply, lack of clean water, low level of education and health as well as lack of transportation facilities. With this new understanding, clear perspective of rural poverty can be revealed, which is generally found in many rural villages, then followed by gaining insights on how to cope with it and find the appropriate solution to poverty. In simple way, to alleviate rural poverty there should be appropriate infrastructure in the rural area and the only way to do so is by developing such supporting infrastructures there (Berry et al., 2004).

Various studies show that the infrastructure development especially rural road infrastructure development will affect to the increase in rural incomes and reduce poverty significantly. During his research held in south East Asia (Vietnam) Van de Walle (2001) has found the significance of rural road investment to help reducing poverty in developing countries. Four years later, in other research on rural road infrastructure in Laos, Warr (2005) has also found that improving the seasonal rural road will have significant contribution on alleviating rural poor. Those two researches have clarify the role of infrastructure in economic development is very important and quite significant. In more specific, Orabourne (2008) has argued that the availability of access roads connecting rural areas with rural areas or other nearby cities will reduce transport costs of goods produced village. Meanwhile, Purcell (2005) has illustrated the significant role of Farm-To-Market road in rural areas of Lao PDR in helping to improve farmer livelihood activities. This improvement of infrastructure has broad the access to better inputs and technology, raise their income (from agriculture activities) and then reduce poverty. In addition the road will also improve access to social services and other economies.

Infrastructure is actually a key to sustainable growth in the way that it can improve productivity as well as competitiveness (Fay and Toman, 2010). Good and sufficient infrastructure can reduce transport time (road infrastructure), creating fast communication (information technology and communication infrastructure), and reliable energy support and water supply. Infrastructures will also accelerate economic activities by giving accessibility of people to local and larger markets, means that it creates more opportunities to access economic activities. Given those strategic function, infrastructure framework then shall be supported by a policy framework, regulatory framework, and institutional framework (Soedjito, 1998).

According to planning theory, road infrastructure has a significant role in supporting economic activity. Good quality of road infrastructure can support mobility of people and goods as well as connecting certain center of activity with other spot activity in different areas. Naturally there is no single region that can stand on its own without support from other. Whether like it or not, to be growth a particular region should depends on other regions. Similarly, other regions have a dependency on that specific area. Among these areas, there are certain areas which have developed and growth than other. These areas have the advantage over the other so that these area has larger and more facilities making it capable of serving the needs of the population in a wider radius. This will make the population at a certain radius will visit the region to obtain the necessary requirements. Here is how the certain network is developed between places in a territory and region. One region becomes the centre and the others become nodes (usually rural areas).

Because of that dependency, Tacolli (2004) suggested that due to the different levels of resource in those areas and the limited ability of the region in supporting the needs of the population, there will be a compensation of activity in the form of the exchange of goods, persons as well as services between those connected regions. This process of exchange will be triggered with process of supply and demand negotiation. This process of supply and demand can be happened only when there is a tool connecting the regions. The linking tool is the necessary means of transport, meaning the kind of road infrastructure which makes it possible to serve the mobility between regions.

Some research indicates the positive effect of roads on poverty alleviation through economic growth, the kind of influence called by indirect transmission (Ravallion,

1996). The influence can also in the form the direct transmission in which the contribution of infrastructure development will effect to personal welfare of the poor through productivity and income (Gannon, 1997). In term of connectivity, decent road infrastructure will help economic growth center for sharing of larger benefits, broadening economic opportunity, improving the income and standard lives of all members of society, especially for the poor. At the end, it makes the development more inclusive for every citizen. Specifically for farmer and rural people who mainly engage in agricultural activity, access to road will have direct impact on the price of the yields. It will also determine the price they should pay for purchasing their food (Jacoby, 1998). Moreover, according to Reungsri (2010), development of road infrastructure will directly affect society in term of economic and social. In addition to accelerate the economic growth, it also has impact on improving social welfare for society of a whole such as decreasing poverty, promoting redistribution of income and also mitigating degradation of environmental (Reungsri, 2010).

Road infrastructure has an important role in reducing poverty by providing easier access to basic services. Here, conceptually, the connecting role of infrastructure reinforces relationships that connects economic growth and poverty reduction by providing people with the services they need (Loayza and Odawara, 2010). This connecting role will also bring impacts on the activities through which people earn their livings. Meaning that better access to enter the market can help them to participate in wider kind of money earning activities to increase their household's income (Gibson and Rozelle, 2003) and reduce income inequality among citizen.

In macro level, Gelaw (2010) using the estimated fixed effect models in researching for correlation of economic growth, income inequality and poverty. From his study, it can be concluded that poverty will continue to be high or even increase if a country fails to anticipate the increasing of income inequality. In micro level, increasing income will directly decreasing the vulnerability of certain individual or household to be poor. Specifically, relation of rural road development, poverty alleviation and economic growth has been described in the "joint flag study" research finding conducted by IBRD and ADB in 2005. This study concluded that road infrastructure development has positive correlation with poverty alleviation since it can promotes economic growth through the increasing of per capita income

as well as its multiplier effect in improving job opportunity. Directly, these two aspects will lead to alleviate poverty in rural area (IBRD and ADB, 2005)

Furthermore, it can be said that rural road infrastructure will support rural development and poverty alleviation in the way it improve economic and develop social activities in rural area (Jacoby, 1998). Decent rural road will help certain undeveloped rural into developing one by increasing ease of mobility people and goods (in this case agriculture product) from the production centre to the market. Meanwhile, larger mobility to and from production sites (agriculture farm), to and from city centre or even just to the neighborhood will require high quality road infrastructure. However, conflicting views regarding the relation of economic growth and road infrastructure development remain within researchers. Some scholars argue that economic growth will initiate road infrastructure development while other argues that there should be rural road development first before achieving economic growth (Fan and Chan-Kang, 2005). Corresponding to these arguments, there is no need to contend one another. The fact is whatever the cause or the consequence, the relationship between those aspects is just like iteration cycle. The process could be uncertain which one is before the other however, the most important thing is that many empirical evidence have suggest the contribution of rural road infrastructure to economic growth as well as poverty alleviation is significant enough.

2.4. Poverty, development and planning approach

As it mends to be, planning is the kind of anticipating the uncertainty of the future. Meaning that in dealing with the future, planners should aware of the changing situation of nonlinear world where every aspect interacts. The key point here is the adaptability through continuous process of evolvment both in planning theory and planning practice and understanding how the changing practices of spatial planning. (Almendinger, 2006). In dealing with rural poverty and infrastructure development, the main aspects that should be considered are the kind of planning approach that appropriate and can be effectively implemented to cope with continuous process of change in such uncertain rural interaction and how it can adapt with the evolving

progress of the complicated poverty problem as well as the immediate need of supporting infrastructure.

In planning practice, top down planning approach has dominated the development in the recent years. Characterized by technical rationality perspectives and objective oriented which is the most appropriate approach to cope with development growth and that planner serves as mechanist since all the planning phases based on scientific analysis, this approach has accelerated the pace of development (Sandercock, 2006). Unfortunately, this success is halted as the problem of rural-urban socioeconomic and infrastructure get more complicated. Scientific analysis has failed to achieve the collaborative development goal since it only emphasizes on technical rationality and less considers the cultural, social and humanities aspect and also it tends to create rigidities associated with the formal scales of statutory plan-making (Almendinger, 2009). Eventually, Sandercock (2006) came with the notion that for dealing with development issues which require flexibility, first, it should be understood in wider scope so that the plan will be able to accommodate community need, preference and interest.

Along with the global evolving trend of collaborative and participatory planning, the plan to cope with poverty seems to be changed and redefined. In fact, the sifting of development and the rise of complexity in poverty problems has forced planner (government) to be more communicative toward shared understanding (consensus) to adapt with such situation. Since rural poverty and infrastructure development are involving community and wider public interest where poor citizen participation become so crucial, whether like it or not, communicative rationality (post modernism) should be referred and implemented with regard to inter-subjectivity, agreement and consensus -the very essence of collaborative planning- (Healey, 1997). It implies that at the same time planning can be used to manage the development and nurturing public and poor people interest (democracy) (Flyvbjerg, 2003). In addition, Graham and Marvin (2001) have provided the perfect illustration on how communicative approach can answer the problem generate by the implication of infrastructure development. They underlined the importance of encouraging communication or participation during the planning process.

Collaborative development approach can also be implemented to the case of poverty and infrastructure development in governmental decentralization system and local

autonomy policy such as in Indonesia. In coping with rural poverty and developing rural infrastructure nationwide, instead of design a plan to be implemented on top down manner, government can try to gain more input from the lower level (province, regency, district or even village) to be taken into account on the plan or on decision making. Here, government are expected to facilitate the participatory process trough mediating collaborative process through consensus so that bottom up approach can fashioned in descent way. In fact, collaborative planning can be used to enhance the institutional capacity planning (Healey, 1998).

Nevertheless, it does not mean that to alleviate poverty and develop rural infrastructure the technical rationality based on planning knowledge should be left aside. Resembles with the argument addressed by Sandercock (2004), government are expected to be the advocates for public interest, and in the same time, (government) planner can synergize scientific consideration with collaborative approach. Ideally, in planning practice level, to develop rural infrastructure both technical aspect and social aspect should be considered. Thus, in the decision making, planner not only should focus on hard science (quantitative, analytic and scientific) but also should focusing on soft science such as cultural aspect, social and humanities.

From the discussion above, it can be inferred that to understand the role of rural road development on poverty alleviation specifically in rural agricultural area comprehensively and to build research framework implemented on this research, first the impact of rural road development infrastructure to the poverty alleviation program should be acknowledged, both from rural road development aspect and from poverty alleviation aspect.

From the viewpoint of *rural road development*, the aspects that should be discussed are existing condition of rural road infrastructure *before development* and *after development* to know the changing condition of rural road, financial aspect and governmental development expenditure of rural road infrastructure and governmental policies regarding rural road development infrastructure. From the viewpoint of *poverty alleviation*, the aspects which should be explained are the *actual condition* of rural poverty and the *alleviation program* issued by the government to cope with such poor condition. Once those aspects are explored from both viewpoints, then condition of poverty before and after the rural road

infrastructure development can be compared to determine whether the development is truly have positive and significant impact on combating poverty or it does not have significance at all.

Emphasizing the exploration on theoretical insights regarding rural road infrastructure and poverty alleviation, the framework of this research is built upon these themes. First of all, the role of rural road development on poverty alleviation is influenced by the impact of rural road development in two different subjects: the impact of rural road development to Poverty Alleviation Program that is established by government, and the impact of rural road development on rural poor income. The first subject is assessed in two aspects: rural road development and poverty alleviation. Both aspects are examined based on existing condition and government policy, with also supplemented by financial issue on rural road development aspect. Meanwhile, the latter subject is measured from four indicators of poor income in rural area that consist of agricultural income, agricultural growth, commodity production-sales gap and poor household population. These indicators are brought into light to support and justify the relation and the role of rural road development on poverty alleviation. By viewing the impact of rural road development in two subjects, the condition before and after completion of rural road infrastructure can be compared. Eventually, the impact of rural road infrastructure development to poverty alleviation can be determined afterwards. To be clearly conceived, this framework of understanding is presented in *Figure 1*.

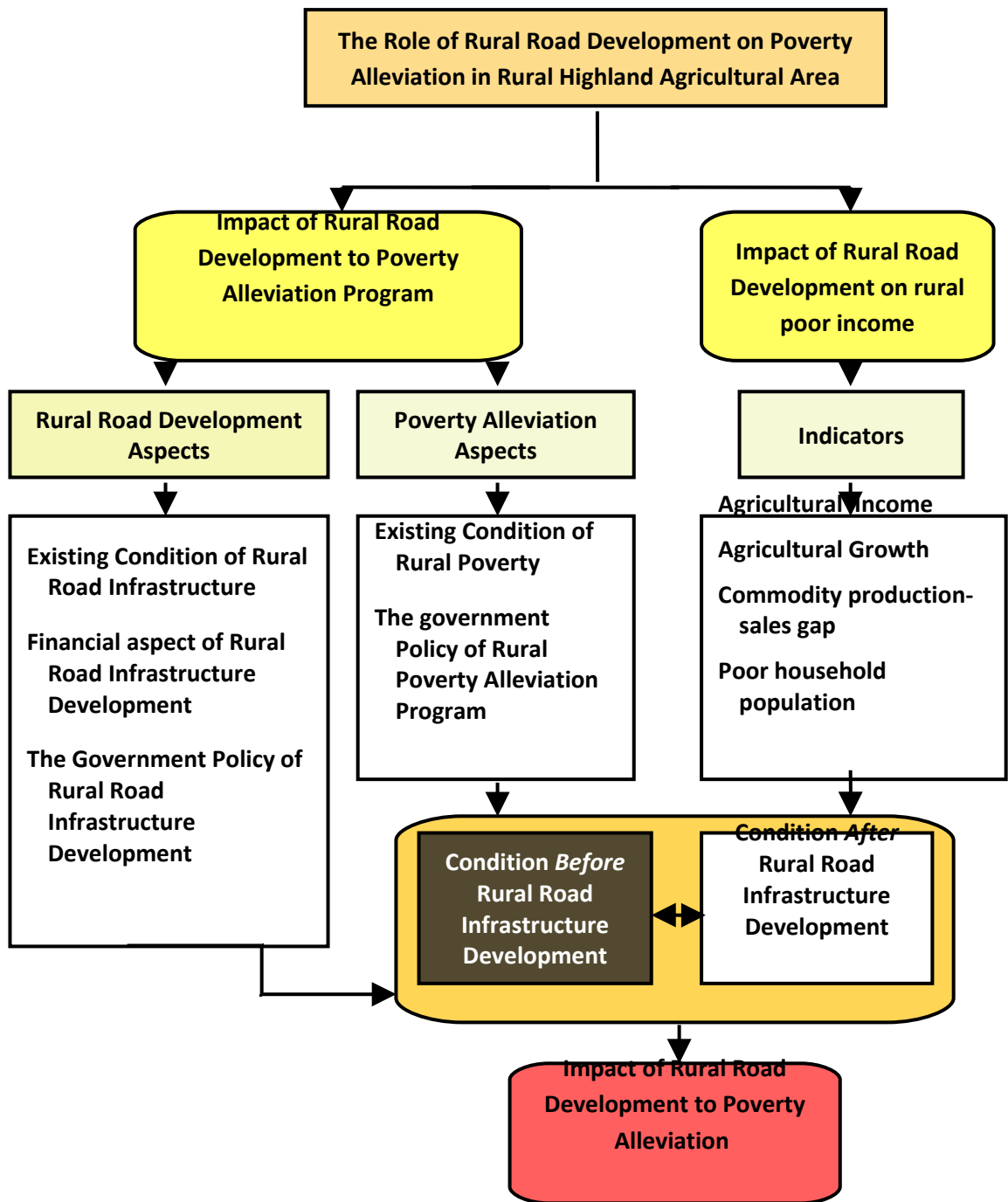


Figure 1 Frameworks of Understanding

Chapter III Research Methodology

This chapter discusses about research methodology implemented in this research. Consist of four subchapters, it begins by explaining the research framework based on literature study and optimize the use secondary data retained from the data and document collection. It then explains about the kind of data required to be analyzed and the resource of those data and document as well as discussing about the designed research analysis that is applied for seeking the correlation of poverty and poverty alleviation and also connection of poverty and rural road infrastructure development. The chapter ends with the research scope to specify the study. Once the research methodology is clearly presented, overview of the research is also explained in the following chapter.

3.1. Research Framework

Poverty is very wide scope. It involves not only quantified aspect such as income or purchasing power but also immeasurable aspects. Thus, in the case of poverty and infrastructure, analysis in comprehensive ways should be made. Literature study method will be helpful to analyze poverty and infrastructure in more conceptual level (Baker, 2004). Hence this research is purely based on literature study. Theoretically it reviews rural road infrastructure and poverty alleviation in rural highland area. Regarding the research objective, this research focuses only on this topic. Meanwhile, in rural level the characteristic of poverty in the community cannot be disregarded with social value and culture, thus the most appropriate way to explain this interaction is by causal comparative or in this research, descriptive analysis is employed.

Due to the time objective of this research in revealing the relation of rural road infrastructure and its influence on poverty alleviation and also the social aspects of rural highland poor farmer communities in Wonosobo in which must be able to be applied by practition or government, analysis should be focused on the micro level rather than on macro level. Nevertheless, giving the limited time constrain, the better way to do so is by optimizing the use of secondary data.

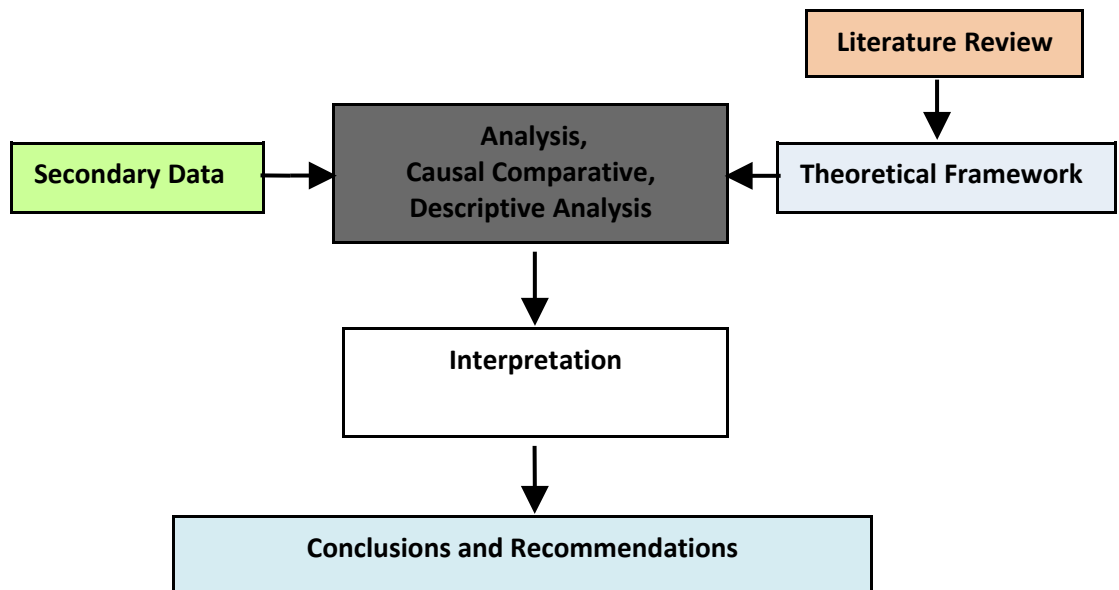


Figure 2 Research Framework

3.2. Data Collection

Data and document collection is very crucial in the research process (Boaduo, 2008). It will determine the result of the analysis in two different ways, the reliability and the availability. The reliability of the data and document will directly affects the validity of the research conclusion and recommendation. For data requirement, the more reliable the data, the more valid research result. In contrary, data that not represent the real fact and situation will lead to research distortion (Moleong, 2005). The availability of the data is closely related to research analysis. Limited data tend to confine the kind of analysis that can be done. Wider and deeper analysis requires complete information.

As has been designed on the research framework to revealing the relation of rural road infrastructure and its influence on poverty alleviation and the social aspects of rural highland poor farmer communities in Wonosobo and also to clarify the information, secondary data is fully utilized. The use of secondary data not only the better and cheapest method appropriate for research with tight time schedule (Creswell, 2003) but also it will help to prevent any bias emerged from different

kind of interpretation and provide more contextual material for the research (Flowerdew, 2005). As this study applies literature study research method, contextual material availability is important.

In fact, secondary data is required for in depth-exploration regarding the topic study of poverty and infrastructure development and illuminates the actual circumstances. The use of secondary and already published data here benefits in term of reliability and financially especially for limited budgeting research. Giving such advantages, it is expected that by secondary data adequate quality of information can be obtained to back up and justify the research finding.

The document requirement to be analyzed on the relevant theme of rural road development and poverty alleviation is based on similar experience in international level. Therefore, the source of such document should also cover worldwide level. The most appropriate way in this case is obtained from international reference, research finding, articles journals, books and e-books and also official report from relevant organization. This research is conducted with the help of many website of planning, poverty and infrastructure development as well as university library.

The data required on this research consists of secondary data of local Wonosobo Regency. Poverty data is obtained from Participatory Rural Appraisal (PRA) of poverty in Wonosobo 2006. Meanwhile, the specific secondary data is obtained from local government institution, local research institution, local universities, and informal community as well as searching in the internet for more general secondary data.

For Wonosobo Regency, unfortunately, the secondary data needed for this research are very thin. Not only that poverty and infrastructure data has not covered all aspects of rural area but also it often failed to reflect the real condition that should be understood. Nevertheless, these data can still be used by combining with direct observation and interview during PRA poverty 2006. Using two kinds of data, beside broaden the information; the reliability of secondary data could be verified.

To be more detail, the data requirement is categorized accordingly to each research objectives to ensure the proper analysis. Firstly, to explore and understand the existing condition of rural road infrastructure in Wonosobo Regency it required data

of past (before development) and present condition of rural road infrastructure including the type and the length. Most of the data of this category is obtained from the governmental office.

Secondly, in order to know the existing condition of poverty in rural highland area it needs the data of income per capita of rural highland poor including income in which generated from agriculture activity in both time frames before and after infrastructure development. This type of data is obtained from administrative archive of government office. In addition, to study and portray actual condition of poverty and its background it simply required data set of poverty structure in study area. It utilizes the data from Participatory Rural Appraisal (PRA) of Poverty Program in 2006.

Thirdly, to study the infrastructure development policy including financial aspect of infrastructure development in rural highland area of Wonosobo Regency, data of rural road infrastructure development policy with its spatial planning should be acquired. These data should also cover the governmental budgeting for rural road infrastructure development complete with the financial scheme.

Lastly, to understand the governmental policy and poverty alleviation program in rural area of Wonosobo Regency, data illustrating policy is required to combat and poverty alleviation program that has been addressed by the local government. *Table 1* reveals in rather detail the types of data required for this research and its sources that is gathered through data collecting.

Table 1 Data Collection

Objective	Data Required	Source of Data	Data Collection Method
1. To explore and understand the existing condition of rural road infrastructure	<ul style="list-style-type: none"> - Present condition of rural road infrastructure - Map of rural road infrastructure 	Secondary data from Bappeda, Public Work Department (DPU) Sub-district Office, Village Office, Monographic data and DDA (<i>Daerah Dalam Angka</i> /Regions in figure)	Secondary data collected by gathering
2. To explore and understand the existing condition of poverty in rural highland area	<ul style="list-style-type: none"> - Income of rural highland poor - Poverty structure in rural highland area. 	Secondary data from Bappeda, BPS, Local secretariat (Setda), Agriculture Office, Sub-district Office, Village Office, Monographs data and DDA (<i>Daerah Dalam Angka</i> /Regions in figure)	Secondary data collected by gathering
3. To explore and understand the financial aspect of rural road infrastructure development in rural highland area	<ul style="list-style-type: none"> - The budgeting for rural road infrastructure development - The financial scheme of rural road infrastructure development 	Secondary data from Bappeda, Local secretariat (Setda), Legislation secretariat, Public Work Department (DPU) , Sub-district Office, Village Office, Monographic data and LKPJ (<i>Laporan Keterangan Pertanggungjawaban</i> /Accountability report)	Secondary data collected by gathering
4. To explore and understand the policy of rural road infrastructure development in rural highland area	<ul style="list-style-type: none"> - Rural road infrastructure development in rural highland area - Spatial planning 	Secondary data from Bappeda, Local secretariat (Setda), Legislation secretariat, Public Work Department (DPU) , Sub-district Office, Village Office, Monographs data and LKPJ(<i>Laporan Keterangan Pertanggungjawaban</i> /Accountability report)	Secondary data collected by gathering
5. To explore and understand the policy and poverty alleviation program in rural highland area	<ul style="list-style-type: none"> - Policy regarding the poverty alleviation - Poverty alleviation program held in rural highland area - Poverty rate in rural highland area 	Secondary data from Bappeda, Local secretariat (Setda), Legislation secretariat, Social Office, Community empowerment Board, Sub-district Office, Village Office, Monographic data and LKPJ (<i>Laporan Keterangan Pertanggungjawaban</i> /Accountability report)	Secondary data collected by gathering

3.3. Data Analysis

In analyzing data obtained from the data gathering, data are organized according to the conceptual framework. Then, to ensure the achievement of research objective, *descriptive analysis* is implemented to measure the various characteristics of the population in rural highland areas of Wonosobo Regency in depth. Descriptive analysis is also beneficial to discuss the changes occurred in the evaluation indicators that have been determined previously, by describing and comparing data community and data conditions of poverty *before* and *after* the rural road development. Furthermore, all indicators are then analyzed further to obtain a comprehensive description of the impact of rural road development to poverty alleviation and increased incomes of rural poor.

In accordance with the planned research design, the most appropriate technique to make comparisons of rural road development indicators, poverty alleviation and welfare indicators (income) in the period before the rural road infrastructure development and after the rural road infrastructure development is paired comparison technique or to be specific "*causal comparative study*".

Paired comparison technique is basically straightforward way popularized from 1920's of comparing two set of social and environmental condition to be judged according specific judgment criterion that combining the advantage aspect of quantitative and qualitative social knowledge (Ragin, 1989). This technique can be utilized to studying social phenomena base on empirical evidence and regularity and for evaluating certain actual case base on theoretical perspective (Ragin and Rubinsen, 2009). For this research, if the subject is improvement of poverty in rural highland area due to the infrastructure development, such method can reveal the relative significance of the improvement. By this way, it provides strong basis for making bold conclusion regarding poverty and its relation to infrastructure development.

In addition, because the purpose of this research is attempting to determine the causal and effect, the kind of technical and statistical analysis to measure this correlation is causal comparative (Johnson, 2001). Here the basic design of the research is defining unit (condition) with dependent variable over other condition with no variable applied to measure the effect generated by the independent

variable or the “cause”. The condition of poverty just after the development is considered as unit with the dependent variable and poverty before development is considered as control variable. This two variable (condition) are then compared base on independent variable (rural road infrastructure development).

Nevertheless, this technique has significant limitation and drawback. It need careful interpretation regarding result and finding as there is no clear justification whether the independent variable is solely and significantly initiate changes on the dependent variable or the change is actually not affected at all (Gay and Airasian, 2000) and the change is initiated by other variable (extraneous variable). This weak control over extraneous variable has lead to the conclusion that can be drawn from the research finding is just that there is a clear Sign of an existence of causal relationship as an evident of significance (Wasson, 2003).

Weighing the advantage over the drawback it look like this technique is proper to be implement in this research, however, due to the limited time available constrain and the limited in data availability paired comparison technique of causal comparative is difficult to be implemented. There should be alternative research methodology that is possible to be implemented in such limitation, in which powerful enough to reveal the significance of infrastructure development to poverty alleviation in Wonosobo Regency without direct observation but rather on utilizing published secondary data and document base on relevant research finding from previous study.

With regard to those requirements, research methodology that can be applied in this research is literature study base on document analysis. The research resembles documentary work involves reading and thorough examination lots of written material in the form of governmental document, publication, scientific journal and relevant research finding (Bryman, 2001). Basically, document analysis is the research study in which can be utilized to draw valid and replicative conclusions and from the book, document or previous research finding on the basis of its actual context (Krippendorff, 1980). Yet the most proper description of document analysis for this case is any technique that is used to draw conclusions through thorough objective and systematical examination to find the contextual characteristics of the message both explicitly and implicitly (Guba and Lincoln, 1981).

In specific, data and document analysis are conducted using both *Comparative Analysis Technique* and *Content Analysis Technique*. To discover the relation of rural road infrastructure development and poverty alleviation in rural highland area the analysis is held in three main steps. Those steps are basically resembles qualitative research analysis (Mayring, 2000):

1. Comprehend the main topic and general understanding

Consist of the first step of elaboration basic understanding about the topic of poverty, rural road development and poverty alleviation. Not only this step is required in building the basic knowledge for the background and introduction of research but also to help in specifying the relevant data and document for further analysis. In this phase, poverty is comprehended from various perspectives including how to measure poverty. Here also discussing rural road infrastructure, its function and its implication base on relevant theory. In this research, this step is mainly elaborated in theoretical framework to illuminate the significance of rural road infrastructure to poverty is seen and understood.

2. Data interpretation and document analysis

Analyzing and evaluating relevant information and theories regarding *poverty*, *rural road development* and *poverty alleviation* from certain resources, comparing the content with the fact and secondary data of Wonosobo Regency. Careful comparative and content analysis are proposed to develop theoretical framework on the relationship of those three aspects. Try to discover the gap between actual fact and the reverence as well as the theories and whenever possible try to explore the reason. This step is concretely exposed in the fourth and fifth chapter of this thesis and become the core of the study.

3. Composing conclusion and recommendation

Constructing conclusion base on the finding from analysis of the data, reference, theories, document and developed research framework. Once conclusion is made, then propose recommendation that might be used to

design a proper planning policy and development in Wonosobo regency specifically for poverty alleviation.

In this case, this research is separated between "*before program implementation*" and "*after program implementation*". This step would be very useful to evaluate the changes that occurred in the research object in a different period. However, this method is not without a drawback. Due to the complexity in many aspects considered, it required a more comprehensive and accurate data base and require systematic and up to date data to be observed more intensively.

To be more detailed in the literature study, the analysis method of this research is concise overview of what have been studying about the topic by evaluates previous and current research base on the highest relevance and closest relation in regard to the research topic (Cooper, 2010). It basically resembles focused synthesis or sometime called as "synthesize of available research", the kind of literature review which tries to explore the existing literature, finding from previous research. Not only it elaborates academic and scientific reference, it even can use the common material sources such as newspaper, as well as people and expert opinions (Majchrzak, 1984 in Raoda, 2006).

3.4. Research Scope

The research only focuses on *rural road infrastructure development* and *poverty* in rural agricultural area on the northern region of Wonosobo Regency. The research areas are limited to three regions, *Kejajar* and *Mojotengah* and Garung sub-districts in where most of the highland areas are located in the slope of Sindoro Mountain. Here, due to extreme topography of mountain slope, local government try to develop rural road infrastructure to enhance the accessibility both to the centre of local and regional economy (market) and reduce isolation.

The research is also focused on social and economic aspect of rural road infrastructure development and the development planning level rather than discuss the technical issues of such infrastructure. Technical issues does not considered in the research just to limit the scope and demarcate the study scope, not reflect less importance of the aspect. The analysis will be employed to compare "before and

after” the development on rural poor area only. In this case, “before development” will be referred to the period of 2001-2007 and the “after development” will be associated to the period of 2008-2011. The infrastructure development will be referred to rural road infrastructure development project addressed in 2007-2008. There will be no comparison with the rich area.

To wrap of, it should be acknowledged that this research of poverty and infrastructure development is not based on the most ideal research methodology. Researching from behind the desk and analyzing already published document and literature in many cases are proven to be difficult to reveal the factual condition in the real world. However, for enriching the complete understanding of poverty and how to deal with this problem indeed many researches finding are needed from many perspectives and various methods. To emphasize the relevance of the topic, the research examines in multi scalar perspective from global and downsized to regional and local level. By doing so, the significance of infrastructure development to poverty can be found in all level besides found in specific local regency scope.

Aside from knowledge enrichment, the implementation of literature study for this research is the most feasible in regard limited time and difficulties in performing direct observation. Nonetheless it should be noted that even with such method, it still can be used to comprehend the relation between poverty and infrastructure development, the topic that is overviewed in the next chapter.

Chapter IV Study of Rural Road Infrastructure Development and Poverty Alleviation in Rural Highland Area of Wonosobo Regency

The dynamics of poverty reduction policy in Indonesia has always been associated with development policy. Reductions in the number and percentage of poor people have always become the success story for the achievement of development policies campaign. Nevertheless, condition of poverty should not be understood as only a matter of a number and percentage of poor people. Poverty should be comprehended broadly in many perspectives and no longer limited to the perspective of economic dimension only. In this case, the low income of the poor is only one of many indicators of poverty.

Therefore this chapter mainly discusses about the true condition of poverty in rural highland area of Wonosobo Regency and the poverty alleviation program launched by local government with regard to the condition of rural road infrastructure and its development. In revealing and exploring more the relationship between poverty and rural road infrastructure development, research finding from previous study is discussed.

Just as discussed in the second chapter of theoretical framework, road infrastructure can support mobility and connecting different areas. This way, road infrastructure indeed will bring consequence to economic activity. Hence it will also generating positive effect on poverty alleviation whether through indirect transmission to economic growth (Ravallion, 1996) or through direct transmission (Gannon, 1997) in which the contribution of infrastructure development will effect to personal welfare of the poor. To answer the first research question of the relation between the development of rural road infrastructure and the problem of poverty, the indirect transmission of road infrastructure on economic growth is examined. To answer the second question, direct effect of road infrastructure development in improving welfare for rural poor and reducing the number of poor people is discussed further.

The justification that the significance of infrastructure development to poverty is not only specific in local case of Wonosobo Regency and can be found in almost all level

and that poverty has a strong local character and experienced differently on many contexts is emphasized by examining research study from multi-scalar perspective with three different level of global, regional instead of examined the research on local level only. Here on the study of infrastructure, economic growth and poverty reduction, whether like it or not we have to take into account a very broad dimensions and complex range of development theme consist of many economic and social aspect. Therefore, to be able to understand the relationships and interaction between infrastructure development and rural economic growth (poverty alleviation), it required to have a broad horizon of understanding, as well as a multidimensional perspective. Only this way we can comprehend knowledge proper enough as base decisions for planning development.

The relationship between the availability of infrastructure and the development of nation has become famous research subject among many development and planning experts. However, if the looking further on this topic, they only examined the relationship between infrastructure with long-term economic growth, while the relationship between infrastructure development and the economic growth in more realistic way especially with the relation to alleviation of poverty in rural areas is still very view. The empirical evidence of how the transmission mechanism of rural road infrastructure development and poverty alleviation is rarely revealed up until recently (Sugiyanto and Setiawan, 2007) Moreover, various methods of data analysis used on various parts of the world, often lead to contradictory conclusion and inconsistent results (Zou et al., 2008).

4.1. Wonosobo Regency at a glance

Wonosobo Regency is part of the territory of Central Java province. It is lied between $7^{\circ} 11'$ and $7^{\circ} 36'$ south latitude, $109^{\circ} 43'$ and $110^{\circ} 04'$ east longitude, located 120 kilometers from the capital of Central Java province and 520 km from state capital (Jakarta), Wonosobo is truly in the center region of Central Java. Altitude ranges from 275 meters to 2250 meters above sea level. With total area of 98,468 hectares Wonosobo Regency is divided administratively into 15 districts, consisting of 236 Villages. Similar with most areas in Indonesia, Wonosobo has a tropical climate with two seasons in a year, dry season and rainy season. The average water temperature

is between 14.3 to 26.5 degrees Celsius with an average rainfall per year ranges from 1713-4255 mm / year. In general, Wonosobo Regency is categorized as humid class areas.

Based on the population registration in 2010, population of Wonosobo Regency is as many as 784,226 people, consists of 388,280 male and 395,946 female inhabitants. Population density in Wonosobo regency in 2010 amounted to 796 inhabitants per km². The rate of population density per district varies considerably. The highest population density is 2,369 inhabitants per km², while the lowest is 432 people per km². Unlike cities, where it is classified base on the population as the big city, medium city and small city, rural areas are not divided into the population aspect because the number of population in rural area are low and almost all of rural areas are relatively similar in term of socio-economical characteristics, so as Wonosobo Regency. Here the society in social term, have closer relations and more profound than in the city. They usually live in groups and the village chiefs, community leaders and groups of elderly have more dominant influence, play an important role in society and even become role models for local residents. Their decision is binding even for the whole community and also used as a guide in life and become the local custom.

Rural areas in Wonosobo are covering about 236 villages. Spreading evenly in all districts, almost all villages resemble agricultural area. Such condition has leads to the fact that most of village community livelihood based on the agricultural sector such as agricultural, plantation, fishery or animal husbandry. In general, each rural resident is only capable to carry out one job which is usually as farmer. Off-farm job just a side job, although there are also a small number of citizen work as civil servants, military, police, and private sector employees, but the percentage is relatively small (BPS Wonosobo, 2010).

For most population in the rural of Wonosobo, agriculture is the only job that can be engaged easily. When there are no agricultural activities which can be done, they will seek additional income from other fields such as a construction worker, or temporary fisherman in the river until there is agriculture activity in the field of that they can do. In addition, the agricultural activity they do is just static and monotonous subsistence agriculture with low technological progress, due to the inadequate knowledge and skills of farmers.

Rural economic development has strong correlation with local economic development in Wonosobo Regency and vice versa. In fact, the role of rural areas is very significant for driving economic growth in Wonosobo regency. Wonosobo rural area consisting 89% of the total area (265 area), contribute for 69% of the total Gross Regional Domestic Product (GRDP) of Wonosobo regency (BPS Wonosobo, 2008). Unfortunately, as the dominance of the regency, rural area of Wonosobo also become the most part of poverty. The contribution of this area to the poverty is almost reaching 68% of the population of poor people live in Wonosobo Regency.

Wonosobo Regency is currently in a critical stage in poverty alleviation. Almost similar with all other regions in Indonesia which are shaken by the magnitude of economic crisis, political and social development in the late 1990s, it then began to re-stabilize in a decade after. But soon after that, conditions that have been recovered are re-shaken by the biggest financial and economic crisis that occurred in Asia Pasific during 1998, as a consequence poverty increase. In 2006 along with the increase of national economy and a consequent increase in the price of potatoes (specific commodity for rural agricultural highland area) at the beginning of the year, the poverty rate in the Regency of Wonosobo was declined. The economic and social situation gradually began to show change and improvement. Although the poverty rate has generally decreased it still remained below the average poverty level for the Province of Central Java. However, this positive trend in overcoming the poverty seems not to long-lasting. Along with the impact of the global financial crisis in 2008, it directly affected the economy from national level until regency level of Wonosobo, push back the growth of local economies and change it into negative trend.

In the past, due to the fact that for almost 32 years of local Wonosobo development was more oriented toward economic growth, poverty alleviation policy was guided by the economic perspective. This approach has lead to the consequence that poverty alleviation in this region was focused only on the dynamic of economic factors. In the end, this kind of development policy is proved unable to overcome the facts of real poverty. Furthermore, the failure of poverty alleviation in Wonosobo Regency was caused of poverty reduction policies which tend to "blame the poor", more in short-term horizon, sectored, and project oriented, this way the policy of poverty reduction was fail to improve the plight of poverty.

Some year after the changing of government, from the new order regime to the era of reformation, national poverty reduction policy look like has lost its orientation just in the middle of dilemma between top down and bottom up approach. However, due to the implementation local autonomy and decentralization in some part of the country, along with the multi perspectives understanding of poverty, it has been developed local initiatives in public policy and budget allocations for development in favor of the poor.

From the overview of poverty reduction policies and programs ever implemented in Wonosobo, it was found that most of the policies and programs do not assess on what aspect that cause poverty. The parameters used to determine "who is the poor" are not based on local community perceptions about poverty itself. This has causes the parameter used is often not suitable to be applied in Wonosobo regency. In other word, due to inaccuracies in the diagnosis of "what makes poverty", has made the poverty alleviation program failed to cope poverty problem. This condition getting worse by project oriented behavior of government bureaucrats in planning and executing the programs that have relevance to poverty reduction.

4.2. Poverty in rural agricultural highland area before infrastructure development (2001-2007)

Becoming one of the highlands with its beautiful natural scenery and plentiful natural resources has made Wonosobo to become potential for agricultural land, especially for vegetables commodity. With its distinctive hilly landscape and positioned between mountainous area flanked by two mountains Sindoro and Sumbing, completed with the rainy weather conditions with high water discharge, naturally Wonosobo can become a center of vegetable farming in Central Java.

Giving the prospect of vegetables in which becomes domestic primary food, we can imagine that it would be beneficial to plant such crop, and it directly generates high income for the people engage with this agriculture activity. We even will assume the government will take care of the business mechanism and the supply of these products in order to fulfill the demand across the country. The fact is contrary to that assumption, instead of supporting the economy in this region with natural potential of the fertile highland area which is plentiful with natural resources

requires to supporting life, the contribution to economy growth is still low. Once again the government missed in an effort to optimize the potency (Local Planning Board of Wonosobo Regency, 2006). Further of the contribution of agriculture sector in highland area of Wonosobo Regency to Local Economic growth can be seen in *Table 2*.

Table 2 Economy Growth for Agriculture Sector in Rural Highland Area of Wonosobo Regency (2001-2007)

District		Economic Growth
Mojotengah	2001	1.17
	2002	1.23
	2003	1.24
	2004	1.26
	2005	1.37
	2006	1.34
	2007	1.30
Garung	2001	1.27
	2002	1.40
	2003	1.41
	2004	1.56
	2005	1.59
	2006	1.71
	2007	1.57
Kejajar	2001	1.10
	2002	1.23
	2003	1.31
	2004	1.26
	2005	1.39
	2006	1.30
	2007	1.41
Wonosobo Regency	2001	2.37
	2002	2.17
	2003	1.24
	2004	2.26
	2005	3.41
	2006	3.34
	2007	3.58

Source: BPS Wonosobo 2004-2007

From the data above, it can be clearly seen that the contribution of highland agricultural is still relatively low compare to the economic growth of agriculture sector in Wonosobo Regency. Based on existing data, from 2001-2007, contribution

of the rural highland areas in Wonosobo regency in the economy (GDRP) was recorded around 13.8% only. In contrary, this number is less comparable to its spatial advantage which almost reached 23% of the total area of Wonosobo regency. This indicates that rural highland economy is still underdeveloped. On the other hand, the role of the agricultural sector, which tends to increase year by year, indicates that the contribution of the rural area to the economy of Wonosobo regency will be more significant in the future (BPS Wonosobo, 2007). Without proper development efforts to increase productivity, for instance by applying advanced technology and management; rural highland economy will not develop and even will worsen. Ironically, along with the deterioration of the rural economy, it will affect either directly or indirectly to the regional economy.

Discussing the poverty in Wonosobo Regency, the role of agriculture cannot be simply overridden. In fact, we can use agriculture aspect as one of the indicators to determine the severe condition. Therefore to illuminate the matter we can figure out through highland agriculture commodity produced and commodity which can be sold to the market both traditional market and to food industry from 2000 until 2007 which can be seen as followed:

Table 3 Production Rate and Sold Product of Highland Agriculture Commodity

Highland Agriculture Commodity		Year						
		2001	2002	2003	2004	2005	2006	2007
Potatoes	Production (quintal)	576,098	553,984	523,876	572,645	530,532	479,699	396,763
	Sold on the market (quintal)	365,246	371,169	381,382	400,851	381,983	350,280	273,783
	Percentage (%)	63.4	67	72.8	70	71.9	73.1	69
Cabbages	Production (quintal)	700,320	724,576	718,437	734,563	751,238	703,738	723,702
	Sold on the market (quintal)	474,396	527,260	494,281	478,283	509,339	472,911	515,998
	Percentage (%)	67.4	72.7	68.3	65.2	68.7	67.2	71.3

Source : Agriculture office of Wonosobo Regency, 2004, 2008

From the table, it can be revealed that there is still significant gap between highland agriculture commodity production (in this case potatoes and cabbages) and

commodity which can be sold into the market. During 2001-2007 the percentages are ranged from the lowest 63.4% in 2007 up to the highest 73.1% in 2006 for potatoes. Meanwhile for cabbages commodity the percentages are almost the same. Varied from 67.4% in 2001 the percentage was increased to 71.3% in 2007. Nonetheless, the high percentage of product that cannot be sold from 2001-2007 has indicate that there a problem with agricultural system in Wonosobo Regency. According to annual document report of local agriculture agency 2006, the lack of supporting infrastructure has been considered as the main reason (Agriculture Agency of Wonosobo Regency, 2006). Beside give trouble in low percentage of commodity sale this poor infrastructure also creates high production cost.

In relation with the cost, the condition can be even worse; the cost of production to seek for income and additional income is high enough. Costs for agricultural production such as the need for expensive fertilizers, trading costs such as transportation (because market access is physically quite far) which is expensive and also the cost of production for the service sector such as motorcycles, all of which greatly affect the income of this poor society (Shepherd, 2010).

In harvesting time when farmer harvest their agriculture commodity, instead of receiving income as soon as they can sell it on the market, what really happens is just the opposite. Farmers, who have tried more than three months to planting and raising vegetable products such as potatoes and cabbage, should be disappointed since they cannot sell their product easily. Bad condition of rural road has made the expense in distribute the product to the market become high (Donnges et al., 2007). It will decrease their price competitiveness on the market, nevertheless there is no many option they have. As the physical constraint of fresh vegetable product in which it can decayed within days (USITC, 2009), whether like it or not, farmers should bring their product to the market even though the cost is high or they cannot even sell it because their products are rotten (Local Planning Board of Wonosobo Regency, 2006).

Looking on the reason of such severe condition, it turned out that the combination of price stability and lack of supporting infrastructure (in this case rural road network) remains as major obstacle (Wonosobo Regency, 2007). According to Poverty Alleviation Document Strategy of Wonosobo Regency 2007, particularly for cabbage commodities, often to be found the price dropped, once it even reaching Rp. 100, -

per kilo in 2002. This price was low enough it will not cover the cost of their cultivation operational. In many cases, farmers are even reluctant to harvest their cabbage; they let it rot in place and just waiting it to be composed as natural fertilizer for the next planting season (Agriculture Agency of Wonosobo Regency, 2006). In contrast to those of farmer with larger capital resources, when the local market no longer provide a reasonable purchase price, rich farmers can bring their produce to other markets around Wonosobo or even outside of Java such as Kalimantan with their own transportation network.

For potato commodities, the condition is even worse. Naturally, potato plant can only be cultivated in area with high altitude such in highland or in the slope of the mountain (Körner and Ohsawa, 2005). On one hand, such place will bring its own consequence as the topography will be arguably extreme making intense difficulty in developing road infrastructure there. On the other hand, for plating potatoes, instead of requires organic substance like chicken manure, it also need pesticide and chemical fertilizer in large doses (Yanggen et al., 2004). Directly it will boost the agriculture production cost. Combining with the extreme topographic constrain and poor condition of rural road infrastructure it will lead to higher cost of raw material distribution and escalating the price of potato commodity (World Bank, 2007).

Ironic indeed, but they almost can do nothing with the power such a small farmer. As engine of local economic growth (O'Sullivan, 2003) they are confined to exploit all the possibility by the fact that the supporting system does not help them. The local government, farmer groups association, and many more organizations that are relevant to deal with this complicated problems apparently did not bring much benefit to optimize its function as the primary source of job creation and wealth generator for the surrounding region (vegetable farmers), at least until this research is conducted.

The poor community who live in rural areas with inadequate road infrastructure service find themselves at a significant economic disadvantage. For agricultural area where many people are engaging on agricultural activity and cultivating plant this problem can be very intense due to their dependency on the ability to get their product to the market. Thus poverty alleviation should be targeted to overcome such problem through improving transportation for activities that serve the poor and to and from market (Brenneman, 2002). Many evidences suggest that

developing rural road and investing in those infrastructures will affect directly to poverty alleviation particularly by enhancing personal welfare of the poor through increasing productivity and improving income.

Poverty Alleviation Document Strategy of Wonosobo Regency 2007 has described that the farmer rural highland really depend on their income generate from agriculture activities. Due to the relatively low income generate from agriculture, on household level, much effort has been made by the poor farmer to earn extra income to live decently or just in sustaining life. Often to be found all family members have worked hard to help to increase their income (Local Planning Board of Wonosobo Regency, 2006).

Furthermore, based on PRA Poverty in 2006, there are at least 4 picture profiles obtained in Wonosobo poor farmer families. Those profiles of farmer poor families are: (1) Poor farmer family with two source of revenue, husband and wife; (2) Poor farmer family with only one source of income, can be husband or wife only; (3) Poor farmer family with two uncertain source of income, both husband and wife are informal labor and the last is (4) Poor farmer family with only one uncertain income, the husband is informal labor and the wife is only house wife with no income at all (Local Planning Board of Wonosono Regency, 2006).

If we compare each of the above poor farmer profile base on the amount of the income vulnerability, the most vulnerable poor farmer family in the communities is the category of poor profile with an uncertain source of income (no. 3 and 4), and categories of the poor farmer profile with only one sources of income (no. 2) is quite vulnerable. The first profile is categorized as adequate as they can earn income from two sources, though one source of income is still considered a side income or extra income (Ellis, 2000).

Viewed from access to job opportunity, poor men can access jobs in all sectors, while the poor women group is limited to work on the field that requires patience rather than skill. The jobs that mostly chose by poor woman can be categorized as permanent even though the income is still considered not sufficient for everyday life. Those jobs are daily needs merchant, sugar and vegetables merchant, food vendors, or domestic servants (BPS Wonosobo, 2007).

Overall, the level of income in the poor rural highland area society can be described in *Table 4*.

Table 4 Low income population in highland area of Wonosobo Regency (2001-2007)

District		Population with monthly Income less than US\$ 24.5 (%)	Population with monthly Income between US\$ 24.5-37 (%)	Total population with monthly Income less than US\$ 37 (%)
Mojotengah	2001	33.67	24.57	58.24
	2002	33.01	25.02	58.03
	2003	26.97	25.73	57.70
	2004	32.52	24.22	56.74
	2005	31.78	23.76	55.54
	2006	33.48	24.92	58.40
	2007	32.39	25.56	57.95
Garung	2001	22.55	18.34	40.89
	2002	22.72	17.00	39.72
	2003	23.11	16.98	40.09
	2004	20.63	17.35	38.02
	2005	23.52	15.27	38.79
	2006	25.63	15.02	40.67
	2007	25.07	14.55	39.62
Kejajar	2001	30,24	26.74	57.02
	2002	29.68	25.65	55.23
	2003	30.06	27.01	57.07
	2004	32.10	24.87	56,97
	2005	29.53	25.15	54.68
	2006	31.23	24.66	55.89
	2007	31.01	24.34	55.35

Source: Planning and Development Board of Wonosobo Regency, 2011

Based on the data of income above, it can be inferred that in two districts researched (Kejajar and Mojotengah District) farmer with monthly income less than US\$ 37 is dominant. The percentage throughout 2001-2007 reached almost more than 50% with the highest 58.40% in Mojotengah District in 2006. Meanwhile in Garung District, with better condition, the percentage of low income farmer in the same periods was less than half population with the lowest 39.17% in 2010 and the highest 44.89% in 2008. According to the Document of "*Profil Daerah Kabupaten Wonosobo 2007*" (Company Profile of Wonosobo Regency 2007) Low income earned derived from land cultivation (agricultural, forestry and plantation) is caused by high dependence on middlemen and high field-market cost distribution (Local Planning Board of Wonosobo Regency, 2008)

Unfortunately, the nature of agriculture activities which closely relate to seasonal aspect has lead to insufficient income in off planting season, many poor farmer families are often to be found wander out to look for extra income on activity other than agriculture to meet their daily needs, for children's school fees and other family needs (Regent of Wonosobo Regency, 2007). There are also certain households that do not have sufficient money to send their children to school, not only because the school fees is beyond their ability to pay but also to gain more income. By not send their child to school is expected to help their parents earn a living or help their parents in the fields looking for food, firewood, grazing, some even have to work in others place (Local Planning Board of Wonosobo Regency, 2007).

Poverty Alleviation Document Strategy of Wonosobo Regency 2007 has described that due to the relatively low income generates from agriculture the poor farmer tries to earn extra income. However, the fact that Wonosobo Regency have a lower human resources level (BPS Wonosobo, 2006) in which majority level of education of this poor communities is only primary school dropout or even no education at all has lead them to have insufficient skills to get descent jobs. With such low education and insufficient skills, they will face the difficulty to develop their capacity; therefore the only job opportunity available for them is just a labor or blue-collar workers. Low level human resources and lack of information makes traditional farmers cannot exploit jobs opportunities outside their own village during off plant season. That is why in many case, even when all family members have worked hard to help to increase their income the condition is still worse (Local Planning Board of Wonosobo Regency, 2006). This situation can be seen on the data of poor household below:

Table 5 Poor household in highland area of Wonosobo Regency

District		Number of Household	Number of poor Household	Percentage of Poor household (%)
Mojotengah	2001	14,476	8.419	58,16
	2002	14,862	8.475	57,03
	2003	14,628	8.627	58,98
	2004	14,532	8.539	58,76
	2005	14,217	8.138	56.54
	2006	14,179	8.213	57.92
	2007	14,367	8.325	57.95
Garung	2001	12,876	5.407	42,86
	2002	12.987	5324	41,35
	2003	12.788	5243	41,77
	2004	12.980	5321	41,56
	2005	13,003	5,257	40.43
	2006	13,052	5,391	41.30
	2007	13,158	5,215	39.63
Kejajar	2001	11.775	6.476	55,64
	2002	11.953	6.336	53,79
	2003	11.788	6.129	52,45
	2004	11.895	6.542	55,75
	2005	11,846	6.477	54.68
	2006	11,739	6.432	54.79
	2007	11,920	6.598	55.35

Source: Local Planning Board of Wonosobo Regency, 2011

From *Table 5*, it can be revealed that in Mojotengah and Kejajar Districts, the poor household still dominate the population. From 2001 there was no significant change in the percentage of poor household in. In Mojotengah District, only slight variation can be seen from the average percentage of 57%. Even after 7 years the percentage are relatively remain the same with small decrease of only 0.78 point from 56.16% in 2001 to the lowest rate of poverty (during 2001-2007) in these districts of 56.54% in 2005. Still more than half proportion of overall district population. The similar pattern is shown in Kejajar District. In seven years of observation, there was no significant improvement on the poverty. The condition was even stagnant from 55.64 % in 2001 to 55.35 % in 2007. Slight decrease was happened on 2003 when the percentage was fall to 52.45 %.

In Garung District the number of poor household was also high even though not as high as the two other. In between 2005 to 2010 the figure was varied slightly from

40.43% to 40.17%. The only different was happened in 2008 when the percentage suddenly escalates to 44.89% but then decreased to its average of 40.35%. Just like what happened in Mojotengah District, the rate of poor household still unchanged after the development year of 2007-2008.

Other significant problem is that poor farmer communities are still having difficulties in post-harvest processing, as a consequence, they sell the crop as a raw material only without further post processing. Income from trading sector also showed negative tendency. This is cause by the fact that the trading is still dependent on the season (specific days, e.g. school holidays, religious holidays, and harvest seasons) and also because the trade is still done on a small scale (itinerant traders) with limited capital (Regent of Wonosobo Regency, 2007). The sources of income for the service sector (labors, tailors, motorbike taxi) are also similar. Annual income is still low with the minus sources of revenue and expenditure (Local Planning Board of Wonosobo Regency, 2006).

4.3. Development of Rural Road Infrastructure in Wonosobo Regency (2007-2008)

As already mentioned in the previous session, the main priority of economic development in Wonosobo Regency on development program undertaken during the new order era was industrial development strategy through regional development planning. As a consequence, city of Wonosobo or urban area not surprisingly has become the main priority of development with its planning model centers of growth (growth poles) approach. For investments in industrial sector and economic infrastructure development, where the criteria of funding priority system is economic efficiency and multiplier effect the focus was always urban locations. Due to the nature of trickle-down effect it is expected that impacts of the development will be able to induce to other areas especially the surrounding rural areas (Harun, 2004).

Oriented on trickling down effect approach, urban areas of Wonosobo are overwhelmed (compared to surrounding rural area) with many kind of facilities and supporting infrastructures that allows economic activities to develop the urban area better than the surrounding rural. Unfortunately, spill-over effect of development

that is expected to occur in rural areas was not much happening. Instead, it appeared that there was backwash effect and even rural areas became depleted of natural resources and human resources. Things that have long been presented by Lipton (1976) in development strategies approach as an "urban bias" is often ignored in rural development.

The development in Wonosobo Regency was focusing more on urban itself without considering the rural area and the aspects of mutual relations between both. It failed in attempting to associate and link with one another. In other words, the kind of development which occurred in Wonosobo Regency is prioritizing development of urban areas with just little consideration to maintain the development of rural areas. Slowly but surely, Inequality and disparity between urban and rural areas occur as side effect of such policies. The similar case has been revealed by Pike,et.al (2002). They highlighted the growing disparities among urban and rural which occurred in developing countries as the side effect of achieving the economic growth on one side with increasing inequality and poverty on the other side.

On one hand, as the center of growth, Wonosobo city has the ability to absorb and collect the sources of economic power from the surrounding hinterland region. This city has the distribution services ability for the surrounding region, and the strength of development lies largely on the ability of this supporting capability. On the other hand, it cannot be underestimated that the role of the rural area around the city of Wonosobo or countryside has significant contributions. As the support of urban areas, either as a local source of raw materials or labor source as well as marketing area, the role of rural area can never be separated with urban development and also development of the entire region. Furthermore, the facts have shown that there are physical linkages between rural and urban such as movement of goods, persons, capital and other social transactions. (Sullivan, 2002). Therefore, the need of appropriate linkage between urban and rural area is necessary.

Ideally, according to the mandate of the constitution (Act no. 38/2004), road development is an integral part of national development. Through developing the connecting line for whole area as well as harmonizing the rate of growth between urban and rural area, government, especially the local one should be able to create self-reliance and equitable local development in accordance with distinctive conditions (Kang, 2003). To achieve these objectives, policies in developing road

infrastructure in Wonosobo Region should be established in line with national development policies but still accommodate local interests. From a local perspective, the local road development is aiming to connect and enhance competitiveness in each area to attract economic activity. In perspective of wider areas, it can be referred as effort to gain economic competitive advantages compared to other regions in the regional or national economy (Schneider, 2008).

In searching for solutions to solve the problem of infrastructure development, poverty alleviation and economic growth, it is crucial to understand that those development problems are not standing alone and apart of each other (Singleton, 2003). Those aspects are closely related to other development aspects such as economy, population, transportation systems, rural accessibility and so forth. Thus the solution for problems of development and poverty reduction will not be achieved if the perception of poverty is still fragmented and it leads to the fragmentation in implementation. Rural road Infrastructure improvements must be made through a broad spectrum, comprehensive, coordinated, and consistent manner (Klein, 2008). Therefore, it is necessary to have a common perspective of all actors, especially key role decision makers to address the relation of road infrastructure development and poverty problems in Wonosobo regency.

Regarding the local and regional economic development, we cannot override the role of the road infrastructure. Like what is described by Sullivan (2002) as backbone of economic growth. As a regency primary supporting infrastructure of all activities, it provide supporting services in which strengthen economic opportunities for the entire region of Wonosobo. With the ability to serve between the cities and rural in a system of certain area, then the spread of development which expected would occur. Connecting road between urban and rural areas should perform as efficient as it can be to support regional growth thus the system can be used as a means to distribute goods and services for the public services so that the process of development can be accelerated.

Administratively, as the main focus of development priorities in Wonosobo Regency, improving the welfare of Wonosobo citizen especially poor people has been embodied in Local development policy and planning of Wonosobo Regency (*Rencana Pembangunan Jangka Menengah Daerah/RPJMD*) year 2006-2010. Among many programs planned to conduct, poverty reduction programs through rural road

infrastructure development has become most important program to be implemented. Improvement of accessibility and removing isolation for the poor is one of the targets to be achieved. In the same document, improving the quality and effectiveness of available rural road infrastructure as well as available transportation network has become the concrete implementation of infrastructure development. This is in line with the demands of society for the development, maintenance and improvement of the quality and quantity of infrastructure.

In Wonosobo, road infrastructure development programs are implemented in the two main programs, road infrastructure development and roads rehabilitation or maintenance program. The first program was focused on increasing the capacity of road infrastructure while the second program of road rehabilitation and maintenance was aimed to maintain condition of built and existing infrastructure so that it can be used optimally and effectively with regard to its standard and infrastructure development plan.

In reality, Wonosobo Regency which has an area of over 948.68 km² and administratively consists of 265 villages has the pattern of settlement spreading in almost all parts of a region. This fact has made developing and managing supporting infrastructure like rural road become troublesome task. Government of Wonosobo regency has to provide and manage infrastructure systems in a wide scope. It takes enormous resources to develop such infrastructure to support economic and social activities for entire region.

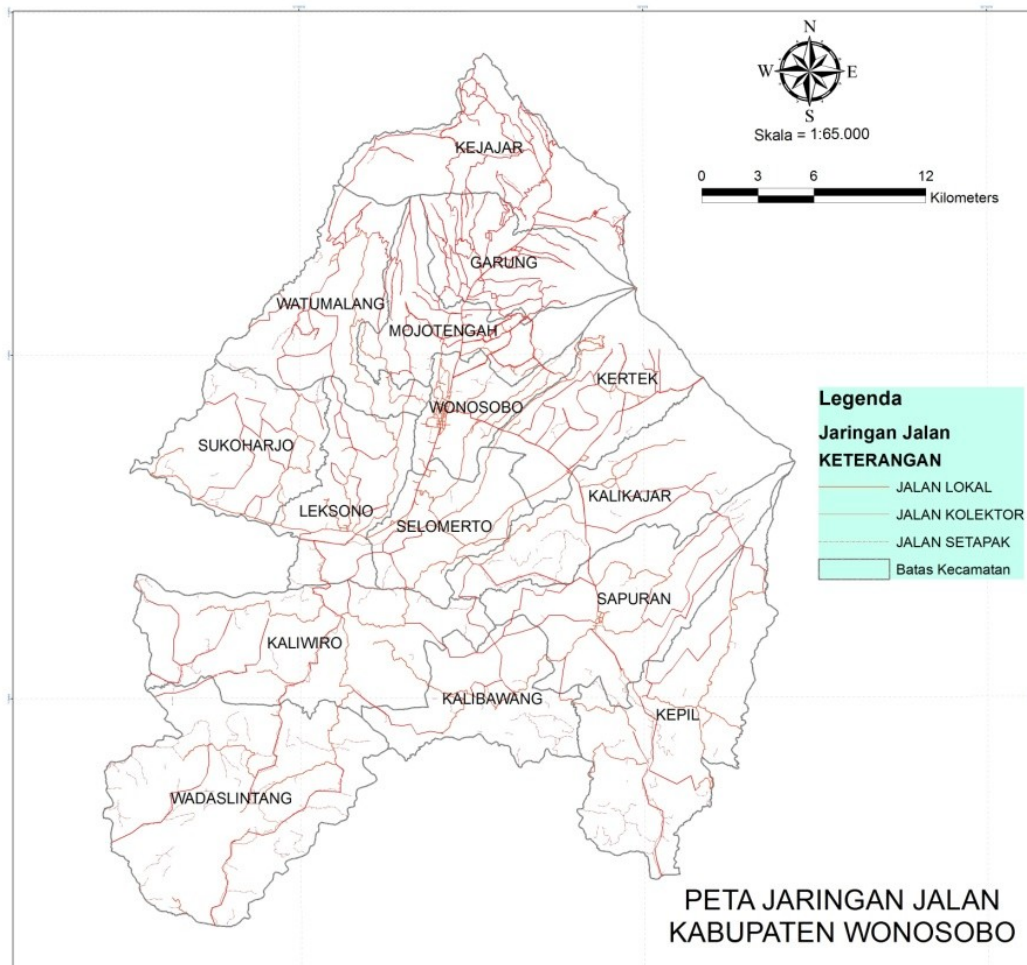


Figure 3 Map of existing road infrastructure of Wonosobo Regency

For rural road infrastructure, during the period 2007-2008, the local government has executed 48 construction projects and 23 roads rehabilitation and maintenance projects with the financial source from APBD (Development planning and budgeting) of Wonosobo Regency with the amount of Rp 5,727,534,000. The main target of this program is productive and strategic rural road located outside the urban area of Wonosobo regency including the three highland districts, with the aim to create adequate road network to support the growth and development of the region as well as improving of accessibility to productive sectors. Through this acceleration of road Infrastructure development, 14 roads have been built or maintained with a length of almost 38 km on entire highland region of Wonosobo Regency. It means that in this period, there was 14.99% increase in highland rural road capacity. The improvement can be seen on the figure below:

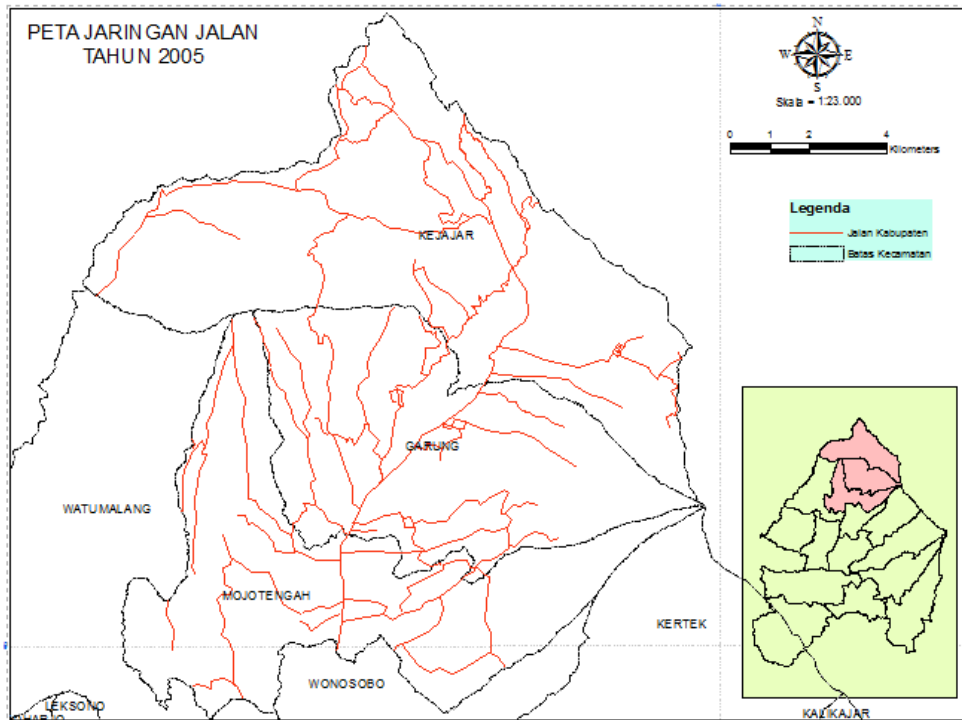


Figure 4 Map of existing road infrastructure of Wonosobo Regency in 2005 before development

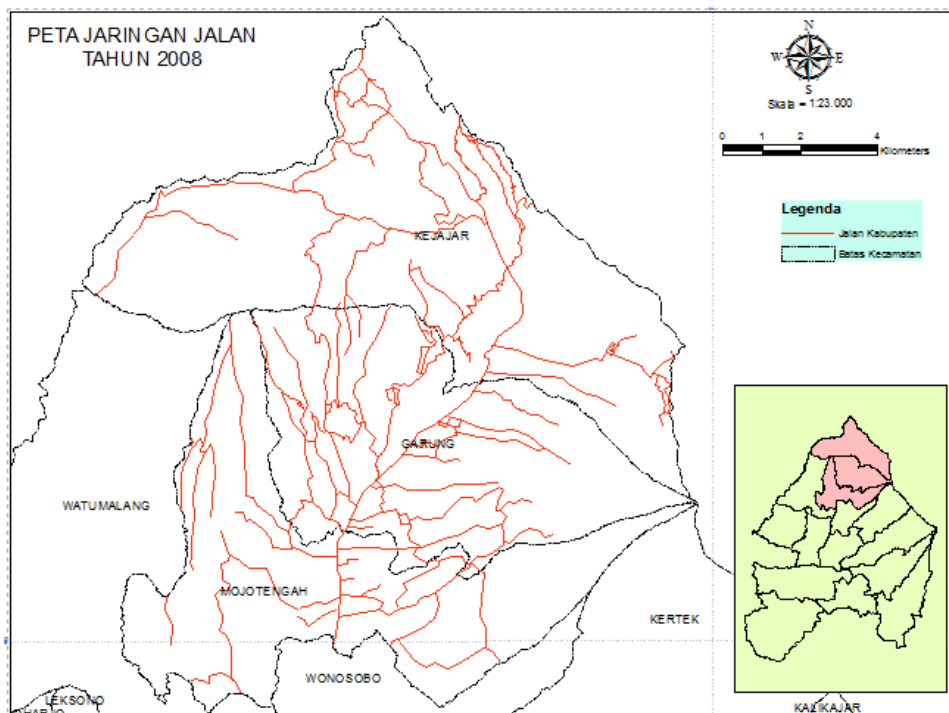


Figure 5 Map of existing road infrastructure of Wonosobo Regency in 20058 just after the development

One of the main reasons for road infrastructure development during the period 2007-2008 in Wonosobo regency is to maintain the competitiveness of existing economic commodities. This is especially for highland agricultural commodities such as potatoes, cabbages and other vegetables products. This is due to the increasing prices of those products in end markets. For that reason local government of Wonosobo regency tries to overcome this by reducing transportation cost. The possible way to do this is by improving local transportation networks from rural areas to the urban areas. Reducing the transportation cost, it is expected that those traditional cultivated agricultural products are still able to contribute as income generation for the people.

In addition to maintain the competitiveness of existing agricultural product of rural highland in Wonosobo Regency, the improvement of road networks is also aimed to gain competitive advantage of the region as whole. The objective here is to promote highland areas as domestic tourism destination. Given the fact that Dieng mountainous area as one of the highland tourism destination in Java is located in this area, it is expected that this network improvement will boost the tourism industry in the region.

What can be generalized from this is that, improvement of road networks in Wonosobo Regency has multiple objectives. It is not only expected to affect the existing agricultural products but it is also intended to diversify the income generation for the rural people. The availability of multiple source of income in turns will help to reduce the poverty from economic perspective.

From the beginning, in the development planning new road construction is expected to increase the capacity of existing roads, unfortunately due to the high rate of quality decline on road infrastructure caused by geographical aspect, rainfall and improper use of the road, increase in the number of proper condition rural road does not correspond to the amount of road construction project. Less effort to maintain road infrastructure was also contribute to the high rate of infrastructure damage (Public Work office of Wonosobo Regency, 2010)

With such very broad the population distribution, it is necessary to take a strategic steps so that the limited resources availability of the local Government will not disrupt infrastructure development and become constraint to poverty reduction.

Development Vision of Wonosobo Regency "*Developing Together with the Community and Prosperous together with Communities*" should be followed up by more concrete infrastructure development by utilizing the potential of the rural poor farmer community participation from the stage of planning, implementation and management.

4.4. Infrastructure Development and Poverty (2008-2011)

Regarding the significance of rural road infrastructure to alleviate poverty, sustained economic growth generally will contribute significantly to the poverty alleviation particularly of absolute poverty (Kessides, 1993). Therefore, first thing to do before we can explore this contribution, is understand the role of transport system and road infrastructure in economic growth. This step is important to comprehend the role of road infrastructure development and transport in poverty reduction program.

In macro level, almost all the literature recognizes that the economic stability is very important for poverty reduction efforts. Not only because macro-economic stability is essential for triggering stable and sustainable economic growth but also economic stability is one of determinant factor for reducing poverty (World Bank, 2002). The Asian Development Bank's (ADB) argue that for poverty reduction in Asia and the Pacific, sustainable economic growth is one of three supporting bases for pro poor development beside inclusive social development and good governance. Sustainable pro-poor economic growth should be achieved through Infrastructure development in order to ensure that more people are lifted out of poverty (Gajewsky, 2006).

Rural road infrastructure and transportation network play important role development. With its main function to supporting economic activities in rural areas, the success of development will be determined by the adequacy of this service. The availability of such infrastructure as well as transportation system are intended to improve mobility services of rural citizen and other resources that can support the growth of rural economy. The aims are both to eliminating physical isolation and giving a stimulant to the development in all regions and all sectors such as agriculture, service, trading, industry and other sectors in rural areas.

With the descent rural road infrastructure and transportation facilities, all economic activities including community empowerment there can be easily developed, particularly in rural areas that have high economic potential. Economic activities of the rural community, especially the activity that has a strong connection with agriculture will be easily executed with the availability of good access to the market. Marketing and technological innovation can only be achieved if access to the area is good (Giyarsih, 2003).

Just as discussed in the second chapter of theoretical framework, road infrastructure can support mobility and connecting different areas. This way, road infrastructure indeed will bring consequence to economic activity. Hence it will also generating positive effect on poverty alleviation whether through indirect transmission to economic growth (Ravallion, 1996) or through direct transmission (Gannon, 1997) in which the contribution of infrastructure development will effect to personal welfare of the poor.

In Wonosobo Regency, the contribution of rural road development can be reflected through the economic growth of agricultural sector in rural highland area particularly for potatoes and cabbages commodity within the period after the rural road infrastructure development was executed in 2007-2008. The data is presented as follow:

Table 6 Economy Growth for Agriculture Sector in Rural Highland Area of Wonosobo Regency (2008-2011)

District		Economic Growth
Mojotengah	2008	1,40
	2009	1,37
	2010	1,48
	2011	1,50
Garung	2008	1,70
	2009	1,68
	2010	1,81
	2011	1,85
Kejajar	2008	1,43
	2009	1,55
	2010	1,50
	2011	1,63
Wonosobo Regency	2008	3,69
	2009	4,02
	2010	4,17
	2011	4,39

Source: BPS Wonosobo, 2012

The table clearly shows that in Mojotengah District, there was no noticeable improvement of economy growth in agricultural sector. From 1.40 in 2008 the figure just increases 0.1 point in the next 3 years. Nevertheless, looking further to

Table 2 in the previous sub-chapter within the period just before the rural road was constructed in 2007-2008 it can be noticed that there is slight increase on economy growth. From average economy growth on 2001-2007 of 1.27, the number was raised to average of 1.43 after the development.

In Garung District, the same occurrence was happened. In 2008-2011 there was no significant increase can be found. Only 0.15 point higher can be seen within 4 years after development. The significance is clearer when compared to the years before the development. From average of 1.50 the economy growth is boosted to average of 1,76, almost 26 point higher.

More or less in Kejajar District, as the district with similar geographical feature of highland area, same tendency can be seen. Slight increase within four recent years from 1.43 to 1.63, the number was comparably larger to those of 2001-2007 periods. From average economy growth of 1.28 in 2001-2007 fell to average of 1.52 after the development.

The economy growth in those 3 districts is still comparably smaller than the average economy growth of agriculture sector in Wonosobo Regency, however, the fact that there was increase in economy growth after the rural road development has indicate that somehow the development has brought the improvement to the economy in those rural highland agriculture area.

In relation with poverty alleviation, the significance of infrastructure development through economy growth like what happened in this area is resembled indirect transmission of infrastructure development to economic growth (Ravallion, 1996). Zou et al, on their research in 2008, found the similar conclusion that infrastructure and better transportation network can spur higher economic growth especially in region of east and central China. By using the Granger-test analysis on various railways and roads in different rural regions, they concluded that investment and construction of road infrastructure constitutes a source of growth. They also found that road development infrastructure has significance on poverty alleviation in poor areas; therefore they suggest that it should become a priority on development policy (Zou et al., 2008).

Another research held in regional level in china mainland on 2005 has also led to the same conclusion of the significance of road infrastructure development to economic growth. Using a literature survey, Fan and Chan-kang (2005) have tried to explain the causal link between road infrastructure and economic productivity in China mainland and found that of the contribution for national GDP, most of rural road have benefit/cost ratios for about four times larger than the benefit/cost ratios for high-grade roads. For poverty alleviation, rural roads alleviate far more rural poor above the poverty line per Yuan invested than high-grade roads (Fan and Chan-kang, 2005).

Furthermore on this research, a significant explanation has been found. Apparently when implemented in China, there was a trade-off between growth and poverty reduction in developing rural road infrastructure. On one hand, highest economic returns will be generated by rural road development in the eastern and central part of China, on the other hand the highest contributions to poverty reduction is shown in implementation in western part of China (Fan and Chan-kang, 2005)

Straub and Terada-Hagiwara (2011) in their paper depicting the development of infrastructure in some developing Asian countries where they try to analyze the contribution of infrastructure development, economic growth and productivity, have conclude that the infrastructure stocks in developing Asia have been growing at a significant pace. The most important finding is that there seems to be a positive impact on the economic growth due to the accumulation of infrastructure. One kind of infrastructure will have low influence to the economy; however, the accumulation of many infrastructures as a massive build up of these stocks will have direct significant influence to economic growth. The combination of such infrastructure was needed but due to the financial limitation may be beyond the financial reach of many Asian governments (Straub and Hagiwara, 2011).

For another region, of the influence of rural road Infrastructure to poverty alleviation through indirect transmission of economic growth is shown on the research of Limao and Venables on 1999 in Africa. Through their research they conclude that even though the landlocked rural area economy contribute only small percentage of 30% of the national trade (compare to those of a coastal region), improving the transportation system and rural road infrastructure would make significant increase those the landlocked economy's trade to more than 40% of that

of a comparable coastal economy (Limao and Venables, 1999). Furthermore they even found that improving the existing as well as developing new rural road infrastructure in sub-Saharan Africa would be very beneficial for increasing African-trade for the whole continent.

In regional level of Africa, rural road infrastructure development is also creating better economic growth. There on 1990, after surveying more than 36 countries in Africa, they concluded that the amount of difference between the actual share of manufactures in total exports and the predicted share was strongly correlated with the amount of paved roads. This conclusion suggests that in some African countries, the improvement of rural road infrastructure can raise the share of manufactures (which located in rural area) in exports (Wood and Mayer, 2001).

In Indonesia level, Rosyadi (2000) during his research on the relationship between infrastructure spending and economic growth of Jambi city in the east coast of central Sumatra in the period of 1979-1998 has estimated that were one-way patterns of relationships between economic growth and development expenditure. The results showed that during the study period, road infrastructure development expenditure has positive impact on local economic growth both on the short run and on the long run (Rosyadi, 2000).

Based on the research of the impact of road infrastructure investment on the economic in Majalengka Regency, West Java Province conducted by Sriyana and Rosyidah (2007), it can be concluded that there is an important relationship between governmental developments spending on the infrastructure (rural road) on the economy of rural areas. The correlations between development spending is positive and significant (utilizing the linear regression methods) meaning that the bigger governmental expense the better economic growth for local Majalengka Regency (Sriyana and Rosyidah, 2007).

Those previous studies reveal the same finding that the availability and the condition of linking road and transportation network have significant contribution to accelerate economic growth. In addition, these studies also explain that in many part of the world (China, Asia, Africa, Indonesia) in term of quality and quantity of road infrastructure and transport system are way much better in urban area than in the rural part. With the smaller scope, this condition is more or less similar with the

situation in Wonosobo Regency where the condition of existing road infrastructure in rural area is worse than in the urban. Worse situation here meaning that due to poor maintenance system and low maintenance budget the existing roads are no longer in good shape and in good condition so that it cannot serve as it mend to be, or it mean that the descent supporting road infrastructure has not reached certain rural area, leaving those area to be almost inaccessible if not isolated.

Theoretically, beside through economy growth, the significance of development can be described trough direct transmission where the infrastructure development will bring direct impact to personal welfare of the poor (Gannon, 1997). To explore the significance of rural road infrastructure development to alleviate poverty in rural highland of Wonosobo Regency though this channel, once again we can employ the agriculture commodity to illuminate the relation. To be specific, we can look further on the Table 7 below.

Table 7 Production Rate and Sold Product of Highland Agriculture Commodity (2008-2011)

Highland Agriculture Commodity		Year			
		2008	2009	2010	2011
Potatoes	Production (quintal)	447,676	450,213	442,765	452,874
	Sold on the market (quintal)	318,473	337,209	338,272	349,618
	Percentage (%)	71.1	74.9	76.4	77.2
Cabbages	Production (quintal)	596,859	670,552	681,651	665,087
	Sold on the market (quintal)	399,895	484,138	507,683	492,164
	Percentage (%)	67	72.2	74.8	74

Source: Annual report document of Agriculture office of Wonosobo Regency, 2012.

On the table, it can be noted that from 2008 to 2011, the gap between the production and commodity that can be sold on the market is relatively large. After the development, potatoes commodities sale percentage is just around 74,9 %. Noticeable increase on the potatoes commodity which can be sold to the market can be seen where the percentage was rise from 71.1 % just after the development in

2008 to almost 77.2 % in 2011. The increase in sale percentage gets even bigger if we compare with the timeframe before the implementation of infrastructure development. From only average of 69.6 % during 2001-2007, the figure then goes up to the average of 74.9 % in 2008-2011. On the cabbages commodity, there was also increase after the development of rural road. Sale percentage was escalated from only average of 68.6 % before development to nearly 72% after the road was constructed.

Indeed the production-sale gap is still large, nevertheless, the minor improvement after the development has imply that the rural infrastructure development addressed by the local government in 2007-2008 has positive impact. This significance is justified by the evidence which is illustrated by Binswanger et. Al. (1987). They have found that quantitatively the percentage of roads paved and road density are both positively correlated with crop yield and sale. Likewise, both the percentage of roads paved and road density are positively correlated with aggregate output of agriculture product to the market.

The evidence on direct transmission of infrastructure development to rural poverty in different region is shown on The World Bank research (2002) where they studied power sector reform and the poor in India. It was revealed that more than 7% of growth in the accumulative output was generated by rural road investment by mean of increasing the accessibility for rural farmer to sell agriculture product (The World Bank, 2002). It also discovered that the fertilizer costs were 14% lower in better accessibility rural area. Those two advantages of better road infrastructure has lead to 32% higher agriculture output (Spencer, 1994).

Other evidence that justify the direct significant relation of road infrastructure development and poverty alleviation is the research held by Khanker et al. (2006) in Bangladesh. This research examined the impact of rural road investment to poverty reduction using panel in house-hold level. The finding suggest that through higher agricultural sale, higher agriculture income, higher output prices as well as lower input and transportation cost, rural road investment will significantly reduce poverty (Khanker et al.,2006).

If we refer to lack of supporting road infrastructure as the main reason of this low percentage just as stated on Accountability Document Report of Wonosobo Regent

year 2010 and with regard to the rural road infrastructure development project conducted in those 3 districts in 2007-2008, we could associate those two aspects of sold commodity and infrastructure development have close relation. In this case, theoretically, infrastructure played a vital role in supporting economic competitiveness to sell the product due to the provision of broader distribution network. The road network for example, some sort of facility that creates linking between production resources, markets and consumers. This way, Investing in infrastructure particularly rural road facilities is not only generating economic growth, developing road infrastructure in rural area is a matter of linking structure among region. Construction of rural roads and transportation network for example, will increase agricultural productivity. Regionally, it will provide access for agricultural products to be sold to the market either within the region or even outside the region. In addition, infrastructure also played a vital role in supporting economic competitiveness especially in the provision of broader distribution network, energy resources as well as input other production. The road network for example, some sort of facility that creates linking between production resources, markets and consumers.

This fact implies that development of road infrastructure that can directly serve rural agricultural activity will reduce the transportation cost. For rural poor farmer this improvement can help them in two ways. First is helping them to reduce the capital and production cost giving them more opportunity for them to engaging and investing their capital in other business generating additional income. Second is with lower transportation cost they can set their agricultural product in more competitive price giving them more opportunity to participate in the market and get higher profit margin.

The poor farmers who live in rural areas with inadequate road infrastructure service find themselves at a significant economic disadvantage. For agricultural area where many people are engaging on agricultural activity and cultivating plant this problem can be very intense due to their dependency on the ability to get their product to the market. Thus poverty alleviation should be targeted to overcome such problem through improving transportation for activities that serve the poor and to and from market (Brenneman, 2002). Many empirical evidences suggest that developing rural road and investing in those infrastructures will affect directly to

poverty alleviation particularly by enhancing personal welfare of the poor through increasing productivity and improving income.

Economist Jeffrey Sachs illustrated how isolation (landlocked) in some part of Bolivia became one of the factors leading to poverty. There, the rural farmers are capable to produce crops; however, due to the lack of supporting rural road infrastructure, the cost of transport became so expensive. As a result, no matter how high the agricultural productivity of Bolivian rural farmer, it becomes useless because the market price for the products is no longer competitive and the product cannot be sold in the market (Morales and Sachs, 1989). That is why, access to infrastructure to help increase farmers' income, which in turn reduces poverty.

On the area where agriculture becomes the main source of income the amount of sold commodity is the crucial aspect which determines the level of income, even though variation on income of the poor is quite diverse. Since the diversity of poor sources of income in Wonosobo Regency is closely related to their skill and ability which is limited and related to regional typology of the rural area they live, they have been confined to engage in activity closely related with agriculture.

Overall, the level of income in the poor rural highland area society can be described in *Table 8*.

Table 8 Low Income Population in Highland Area of Wonosobo Regency (2008-2011)

District		Population with monthly Income less than US\$ 24.5 (%)	Population with monthly Income between US\$ 24.5-37 (%)	Total population with monthly Income less than US\$ 37 (%)
Mojotengah	2008	27.78	28.14	55.92
	2009	25.65	27.12	52.77
	2010	23.80	26.44	50.24
	2011	22.79	27.38	50.17
Garung	2008	18.34	22.15	39.49
	2009	17.40	19.95	37.35
	2010	15.77	20.40	36.17
	2011	15.73	20.61	36.34
Kejajar	2008	24.32	26.14	50.46
	2009	23.05	24.25	47.30
	2010	20.27	26.18	46.45
	2011	20.06	27.16	47.22

Source: Local Planning Board of Wonosobo Regency, 2011

Based on the data of income above, the household with less than \$37 was still dominate particularly in Mojotengah District with average of 52.27 %, although the percentage is decreasing from 55.92 in 2008 to 50.17 in 2011. In Kejajar District, farmer with monthly income less than US\$ 37 is also dominating. The percentage between 2008 and 2011 reached almost more than 47.50 %. From 2008 to 2011 the figure was decline almost 3.24 %. In Garung District, the percentage of low income farmer was less than half population. During 2008-2011 the average percentage of poor farmer was 38.33 %.

Compare to those of 2001-2007, in two districts, the percentages were decline. In Mojotengah district the figures was drop significantly to 5.18 % lower. In Kejajar Districts the percentage was drop 1,60 % from average of 48,60 % to 47 %. Garung district has become the least in the declining tendency. The percentage of low income population was only drop 1,35 % compare to the period before infrastructure development.

The declining trend in low income population in highland rural area of Wonosobo Regency after the implementation of the rural road development is actually good indication of the impact of such development. This finding of direct transmission of rural road infrastructure to poverty alleviation is also explained through the comparative study of agricultural income in sixteen villages in Bangladesh conducted by Creightney (1993). Comparing transport and economic performance trough a survey of developing countries specifically comparing outcomes of rural area with almost the same characteristic of soil and agronomic conditions, topography, and water condition, it was found that agricultural incomes in a villages with better road infrastructure and better accessibility was 24% higher. Income generated from livestock and fisheries was even increasing 78% higher. It also revealed that agricultural wages were 12% higher and total wage income almost doubled reach 92% in villages with better road infrastructure and accessibility (Creightney, 1993).

In other level, the evidence of significance of infrastructure development to the level of income was illustrated by Spencer (1994) trough the study of infrastructure and technology constraints in agricultural development in Africa. The research finding suggest that throughout the African countries studied, villages and rural area with better availability and better access to road infrastructure will have 2 crucial

advantages. It has 12% higher agriculture wage than the physically isolated area with less accessibility to road. (Spencer, 1994).

Other justification can refer to Infrastructure, Market Access, And Agricultural Prices study by Minten in Madagascar. He found that following the construction of a rural road to a village in which previously isolated and accessible only by air and foot, there was an increasing of 35% in household disposable income, 52% of this increase is addressed to 10% poorest households in the population. He also suggests that farmers who live in the vicinity of rural road (high accessibility within 5 km) benefited 50% compare to those who live in low accessibility area (Minten, 1999).

This mechanism is based on the notion that rural agricultural income and rural agricultural productivity depend critically on the road infrastructure availability in that particular area. By increasing the governmental expense in developing new rural road infrastructure and maintaining the existing infrastructure, rural farmer household can exploit both agricultural and non-agricultural opportunity to increase their income by optimize all production factor including labor and capital in better way (Khanker et. al, 2006). Efficient use of production factor they own will help farmer to raise themselves above the poverty lines.

Perhaps, the most straightforward way of determining the relationship between poverty level and rural road infrastructure can be describe in the data of poor household percentage below:

Table 9 Poor household in highland area of Wonosobo Regency (2008-2011)

District		Number of Household	Number of poor Household	Percentage of Poor household (%)
Mojotengah	2008	14,471	8,382	57.92
	2009	14,323	8,166	57.02
	2010	14,348	8,069	56.24
	2011	14,277	7,890	55.27
Garung	2008	13,304	5,972	44.09
	2009	13,217	5,332	40.35
	2010	13,294	5,340	40.17
	2011	13,225	5,293	40.03
Kejajar	2008	12,151	6,800	55.96
	2009	12,019	6,466	53.80
	2010	12,089	6,280	51.95

	2011	12,103	6,205	51.27
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Source: Local Planning Board of Wonosobo Regency, 2011

More detail on *Table 9 above*, it illustrated that the percentage of poor household in 3 different location of rural highland area of Wonosobo Regency share for the same tendency. In two districts of Mojotengah and Kejajar, from 2008 until 2011 the percentage of poor household was dominated, with more than 50% total number of house hold. With average of 56.61 % Mojotengah District has become the highest in poor household percentage. Nevertheless, there was small decline from 57.92 in 2008 to 55.27 % 4 years after. Kejajar follows the declining pattern with 4.69% less in 2011 than in 2008. For Garung District after 2008, the percentage has fallen to from 44.89% in 2008 to 40,03% in 2011.

Compared to the previous period before the development, there was small decrease that can be noticed. Mojotengah District has 1.29 % less of poor house after development. In Garung District the percentage was drop 0.11 % and in Kejajar poor household is 1.39% less than in period of 2001-2007. Even it only small change once again we can notice that there was a change of poverty indicator after the development of rural road infrastructure, even though the extent of this relation still needs further explanation.

The relation of infrastructure development to the number of household is justified by Fan, et. Al (1998) through the inter linkage in rural India from 1970 to 1993 using head count method. It was discovered that for every billion rupees invested by government in developing rural road infrastructure, the percentage of poor people can be alleviated above the poverty line will increase. It also discovered that to stimulate local economic growth, government expenditure must be addressed in productivity enhancing investment such as rural infrastructure (including roads and electricity). Furthermore, rural infrastructure developments which are focused directly to help the rural poor, have all contributed to reductions in rural poverty. More specific, for rural agriculture area, rural road investment have significant contribution to boost agricultural productivity (Fan, et.al, 1998). It also found that rural road development to increasing the accessibility in rural area will directly help reduce poverty (Gibson and Rozelle, 2003)

Poor accessibility to business centers, market, public facilities and community centers activities (Central Business District) is often a major problem for most of the poor in rural area. Improvement of accessibility of rural areas not only will break the physical boundaries and isolation but will also improve relation and communication to the central business district through a linking network (Ahlstrom et. al., 2011). In general, better accessibility means lower costs of daily necessity goods, lower distribution cost and competitive price of agriculture product. Developing rural road infrastructure will facilitate inter-regional relations. Good transportation network to rural areas will also benefiting urban worker, those who live in rural area but working in the city, without having to move to the cities.

With the descent rural road infrastructure and transportation facilities, all economic activities including community empowerment there can be easily developed, particularly in rural areas that have high economic potential. Economic activities of the rural community, especially the activity that has a strong connection with agriculture will be easily executed with the availability of good access to the market.

On basic principle, most of development program by government has addressed poverty and poor people as one of its main target. Whether direct or indirect, government execute its development program focuses on reducing poverty, increasing economic growth as well as creating job opportunity for the whole citizen. Particularly for poor people (farmer) in rural area, poverty reduction and promoting economic growth are encapsulated on the development of rural road infrastructure.

To wrap off, rural road infrastructure play important role in poverty alleviation. With its main function to supporting economic activities in rural areas, the success of reducing poverty will be determined by the adequacy of this service (source) The availability of such infrastructure as well as transportation system are intended to improve mobility services of rural citizen and other resources that can support the growth of rural economy. The aims are both to eliminating physical isolation and giving a stimulant to the development in all regions and all sectors such as agriculture and other sectors in rural areas. In the end, it will help in combating the poverty.

Chapter VI Conclusions and Recommendations

Having discussed the significance of rural road infrastructure development to the poverty alleviation, the final conclusion from the research analysis result is deducted in this last chapter as a core of study. First, the answers to research questions are addressed. It mainly highlights the implication of the analysis outputs and reflecting back those outputs to the theoretical framework of the significance of rural road infrastructure development to support poverty alleviation explained in chapter two. Once the conclusion can be drawn, practical recommendation on how the implication for policy to execute development and poverty alleviation from the findings of study analysis are provided. Lastly, the possibility area for future research regarding this topic is explained.

6.1. Conclusions

The main concern of this research is to determine the significance of the rural road infrastructure development to poverty alleviation in rural highland area of Wonosobo Regency specifically by improving rural welfare and increasing income of the rural poor. Elaborating many previous studies examining the increase in rural incomes and decreasing in poverty indicator such as poor people population poverty with various secondary data of poverty and infrastructure development in Wonosobo Regency and reflecting to the relevant theory, the research question proposed in the first chapter can be answered.

6.1.1. The relation between the development of rural road infrastructure and the problem of poverty in high land agriculture area of Wonosobo regency

Base on the theory from many literature discussed in the second and fourth chapters, it can be clearly seen that instead making competitive price of commodity produced in village due to reduction in transport costs, rural road infrastructure development will also improvement the access to better agriculture inputs and technology. In term of connectivity, descent road infrastructure will helps connect to economic growth center, connect and enhance competitiveness in each area to attract economic activity. Infrastructures will also accelerating economic growth by giving accessibility of people to local and larger markets, means that it creates more opportunities to access economic activities.

For underdeveloped rural area, by increasing ease of mobility for people and agricultural product, rural road infrastructure will perform as engines of economic growth of helping underdeveloped rural area to grow into developing one thus making development more inclusive for every citizen. Overall it can be said that rural road infrastructure will play its important rule in rural development and poverty alleviation the way it improve economic (economic growth will affect positively to poverty) as well as developing social activities in rural area.

Based on the data and analysis, the incident of poverty in rural highland area of Wonosobo Regency is closely related with the lack of adequate rural road infrastructure to support economic growth specifically for agriculture activity. The evidence of significant gap between highland agriculture commodity production of Potatoes and cabbages and commodity which can be sold into the market due to constraint of bad condition of rural road has underlined the implication.

The significance of rural road infrastructure to poverty alleviation in agriculture area by broadening economic opportunity of sharing to larger benefits of agriculture industry is revealed trough decreasing of this gap between potatoes and cabbages production and commodity sold into the market after the development of rural road infrastructure was executed on this highland agricultural area. This relation is justified with many researches finding from three different levels of global, regional and local.

6.1.2. The relation between the development of rural road infrastructure and rural poor welfare in high land agriculture area of Wonosobo regency

Literature has substantiate that poverty in rural area is closely related to deprivation in many aspects, not only with human capability to fulfill consumption and food security, it also ranging vastly from low income, limited assets, difficulties in accessing health and education facilities due to the disadvantageous accessibility and economic opportunity. This way, the poor societies will be very difficult to break out of poverty if they are still living in an environment with less availability of basic needs.

To encompass such condition and alleviate rural poverty, theory has demonstrated that rural road infrastructure development is a solution for poor community in rural area with and low level welfare. Descent infrastructure will affect to the increase in per capita income as well as its multiplier effect in improving job opportunity and reduce poverty significantly.

For rural poor farmer, this improvement of infrastructure can raise their income from agriculture activities, broadening the access to better inputs and technology, create better access to enter the market which can help them to participate in wider kind of money earning activities to increase their household income and reduce income equality.

From the data and analysis, it can be clearly seen that after the development of rural road infrastructure which increasing nearly 14.99% of road capacity in rural higland of Wonosobo Regency, there was a slightly decrease in the percentage of low income household in three districts researched. In Kejajar district, the significance of rural road infrastructure developement has been shown by fhe fact that there was significant decreasing in poor house hold percentage of almost 4.01% in two years after development.

The influence is also justified by various researches finding in many levels. Many evidences suggest that developing rural road and investing in those infrastructures will affect directly to poverty alleviation particularly by enhancing personal welfare of the poor trough increasing productivity and improving income.

6.2. Recommendations

Having discussing thoroughly the significance of rural road infrastructure to the poverty alleviation in rural highland area, several recommendations are proposed:

- ❖ There should be a change in perspective of comprehending as well as a change in approach to understanding poverty. It should be transformed from only see poverty as the usual problems of the number and percentage of poor people to multidimensional phenomenon with a strong local character and experienced differently on many context.
- ❖ To deal with rural poverty through infrastructure development within local autonomy and decentralization of Indonesian context, accountable and transparent policy of development should be established to achieve a good governance. This kind of strategy could only executed through comprehensive approach to the poor and the inclusion of the poor's perspective in development policy analysis and formulation of poverty reduction strategies.
- ❖ Given the strategic function of rural road infrastructure as a key to sustainable economic growth in rural area, infrastructure development should be supported by a policy framework, regulatory framework, and institutional framework that appropriate and can be effectively implemented to cope with continuous process of change in such uncertain rural interaction and can adapt with the evolving progress of the complicated poverty problem.
- ❖ Synchronizing poverty reduction policies and infrastructure development policies is very relevant thing to do, since the efforts to tackle poverty are affected directly by micro development in micro and macro level within the context of local autonomy and decentralization as well as fulfillment of basic rights for the poor. Hopefully, this could pave the way for the formulation of poverty reduction strategies and alternative policies that are more comprehensive in the effort to realize the fundamental rights of the poor.
- ❖ This overview of significance of rural road infrastructure development to poverty alleviation is drawn through literature study based on secondary data, government document and previous research finding. However, some limitations are still found particularly on the quality of data and information for

this research therefore to illuminate the comprehensive understanding of this topic it still required further research with direct interview especially with quantitative method to enrich the knowledge of rural poverty and infrastructure development.

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