Farm Development and Rural Poverty Comparison among Villages in Kulon Progo Regency of Yogyakarta Special Province of Indonesia

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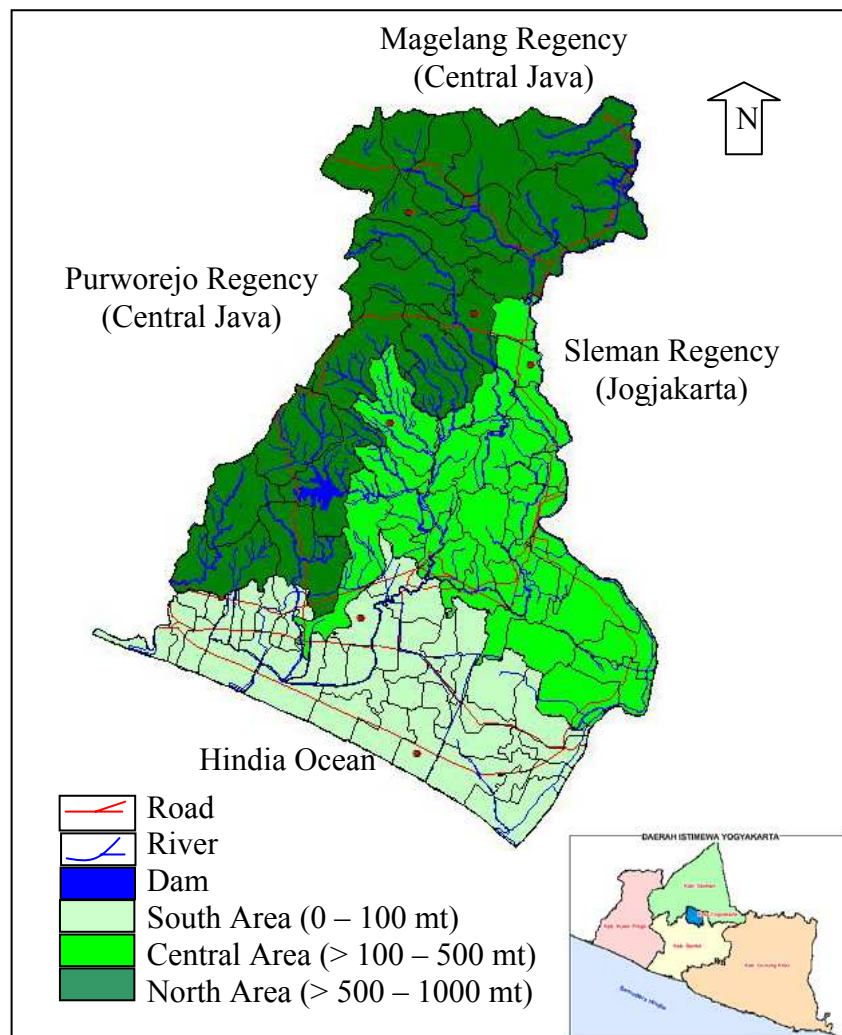
INTRODUCTION

A. Introduction

Agriculture in Indonesia acts seem like "soul" (Prawiro, 1998). This matter is related with the long history of Indonesia and its position is a special phenomenon. Agriculture covers local agriculture, plantation, ranch and even fisheries. Rather than just a source of income, it is mostly attempted by over than half of Indonesian profession. And, almost Indonesian demand rice as a staple food. After all, it is quite sure to have Indonesia economic as "rice economic" during the first Five Year Development Plan (REPELITA) in 1968 through 1973.

Over periods, rural inhabitants particularly farmers persistently living in poor condition. So, rural development strategy must address problem of rural economic and social growth and diminishing poverty. Todaro, M.P. (1983) stated that great problem and challenge in developing countries are about poverty, inequality, and unemployment.

Kulon Progo is one of the five regencies of the Special Province of Yogyakarta. It is located between 70 38'– 70 59' Latitude and 1100 1' – 1100 16' Longitude. The capital of Kulon Progo Regency is Wates which is located 30 km from the capital of the Special Province of Yogyakarta. Total Area of Kulon Progo Regency is 586,28 km² divided into 12 sub-districts, 88 villages, and 930 Hamlets (figure 1).

In general, the topographic condition of this region is hilly and plain. The hilly topographic condition with a slope of between 15% and 40% is found in the north and northwest - *Menoreh* Mountain Range and in the east zone - *Sentolo* Hill range. The region's elevation is from 0 to 500 m above the sea-level in the south and in the middle; and the elevation of between 501 and 1000 m above the sea-level is found in the northwest and north zones of *Menoreh* Mountain Range.

Figure 1: Map of Kulon Progo Regency

Source: Board of Regional Planning of Kulon Progo Regency, 2007.

The district of Kulon Progo is the second lowest district in Yogyakarta province both in economic growth and welfare level, so less developed among four others district. The entire production from the economic activities in Kulon Progo Regency is only 8.7% from the total provincial GDP in 2006.

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Table 1: Gross Regional Domestic Product by Industrial Origin at Constant Market Prices by Regency (Million Rupiahs), 2006

	Industrial Origin	Regency/City				
		Kulon Progo	Bantul	Gunung Kidul	Sleman	Yogyakarta City
1	Agriculture	413,523	814,742	1,136,432	927,535	21,311
2	Mining and Quarrying	18,016	34,000	56,860	19,199	270
3	Manufacturing Industry	243,686	568,064	327,918	873,294	529,450
4	Electricity, Gas and Water Supply	9,184	27,127	14,193	45,460	60,741
5	Construction	72,612	381,915	210,175	554,572	362,187
6	Trade, Hotels and Restaurants	249,166	624,196	393,665	1,132,982	1,163,470
7	Transport and Communication	157,776	219,535	191,580	296,320	846,941
8	Financial, Ownership and Business	90,821	193,399	119,954	536,848	607,348
9	Services	270,064	436,668	379,805	922,848	982,333
	Gross Regional Domestic Product	1,524,848	3,299,646	2,830,582	5,309,058	4,574,051
	Provincial GRDP	**17,538,185**				

Source: BPS – Statistics of Kulon Progo Regency, 2006.

Among the five local governments in the Special Province of Yogyakarta, Kulon Progo Regency is the slowest in economic recovery from the economic crisis of 1998. According to statistical data of 2006, there were 19% or 25,721 poor households found in this district. Eventhough its poverty level, share of

agricultural on regional income were the second higher in Yogyakarta province which was 37.71%.

B. Research Questions

1. Are there any similarities or differences among villages in Kulon Progo Regency in farm development and rural poverty?

2. How do the government policies give impact on farming development and rural poverty?

C. Previous Research

The evidence is quite clear that broad-based agricultural development provides an effective means for both reducing poverty and accelerating economic growth. This is normally achieved not only by increasing incomes for producers and farm workers, but also by creating demand for non-tradable goods – namely services and local products. It is this indirect effect on demand, and the associated employment creation in the off-farm sector of rural areas and market towns, that appears to be the main contributing factor to the reduction of rural poverty (Dixon et.al., 2001). Furthermore, as other study in India shows agricultural growth can reduce urban poverty more rapidly than does urban growth itself, largely because of the consequent reduction in urban food costs and lower rates of in-migration from rural areas (Datt et.al., 2002).

Hossain (2001) examined the role of agriculture in poverty reduction in South Asia and South-East Asia countries. By using panel data and Probit model analyzes, he found that land size, usage of technology, amount of worker in family, non-land asset, and farmer level of education correlate negativity with

poorness. On the contrary the amount of family member correlate positive with poverty level.

Balisacan et.al. (2003), studied about poverty by using panel data during year 1996 - 2000 covering 236 regencies/towns in Indonesia. Its result indicates that economic growth, trade exchange, schooling period, infrastructure and access to technology significantly influence poverty. Poverty elasticity to economic growth equal to 0.7 means inelastic implication. Economic growth is not solely determinant factor of local poverty but also influences of local distinctiveness.

In El Salvador, Rodriguez-Meza et.al (2004) conducted research with aiming to analyze influencing factor of land use and income per capita in villages over periods. With method of panel data regression analysis, he founded that education level, asset, home industry, non-farm side income, livestock and technical assistance have positive and significant effect to income per capita.

Research performed by Sumarto et.al. (2004) embrace a number of province during 1984 to 1996 confirm that more than 50% of poverty diminishing rate was contributed by agriculture output growth, while role of industrial output growth in urban poverty was only marginal. Many other researchers also emphasized on agricultural sector growth importance.

Tambunan (2006) examined influence of GDP on poverty diminishing which decomposed in sectors of agriculture, industrial and trades. Using panel data over period 1982 to 1998, his regression analysis indicated that among three sectors, agriculture showed strongest relation with poverty diminishing than others. He also developed correlation model of poverty level with paddy

productivity, and found 1% rising of paddy productivity will reduce 12% of poverty level.

Chaudhuri et.al. (2006) conducted research in India and China by regressing primary, secondary and tertiary sectors to poverty diminishing. It revealed that primary sector in particular of agriculture sector have more effect in India different than in China which have lower impact. This dissimilarity turned out because there was land ownership inequality in India, while in China relatively no difference.

Narayanamoorthy (2004) studied drip irrigation that has recently been introduced in Indian agriculture. Besides saving a substantial amount of water, it also helps to increase the productivity of crops. This study attempts to evaluate its impact on sugarcane using farm-level data from Maharashtra. Using a discounted cash flow technique, it was found that productivity was 23% higher than that under the flood method of irrigation, with water saving of about 44% per hectare and electricity saving of about 1059 kwh/ha – in short, drip investment in sugarcane cultivation remains economically viable even without subsidy.

D. Research Objectives

This research aims at: (1) to address factors influence the farm development of government policies into poverty alleviation and rural development in Kulon Progo Regency of Yogyakarta Special Province of Indonesia, *and* (2) its comparison among villages, with particular attention paid to the effects of total earnings per capita per month, farm earnings, non-farm earnings, number of household member, land ownership size, number of people with agricultural

funding support / loan facility, farming assistantship participation, and irrigation contribution. For literature advantage, this research gives empirical facts of farm development in Indonesia and its impact on poverty alleviation. In government aspect, these facts would be useful for managing agriculture policies, rural development and poverty alleviation.

THE REVIEW OF LITERATURE

A. Rural Poverty

In common language usage, poverty is about deprivation of necessities - the primary dictionary definition of 'poverty' is 'want of the necessities of life' Oxford (1998, 1135). Poverty is a multi-dimensional concept. Traditionally poverty is viewed as pronounced deprivation in well-being. "To be poor is to be hungry, to lack shelter and clothing, to be sick and not cared for, to be illiterate and not schooled" (World Bank, 2001).

Rural development means improvement in the well being of the people living in rural space (Robinson, 2004). If the livelihood improvement brings into its double people who lack capabilities to meet the basic needs, rural development would encompass poverty reduction. Since 60% of the population in Indonesia still lives in rural areas, a broad based rural development that improves the well being of the bottom of the rural population would contribute substantially to poverty reduction in the country.

Rural people use natural resources – land, water, and biotic resources – as the base of their livelihood. These resources are dominant factors of production in

agriculture, the major economic activity in rural areas. However, many non-agricultural activities such as processing and manufacturing, trading and business, transport, construction, and various types of personal and financial services (that are highly concentrated in urban areas) also develop in rural areas to support agriculture or to satisfy the needs of the people dependent on agriculture. Agriculture and non-farm activities are the means to achieving rural development in the third countries (Myrdal, 1970).

B. Farm Development in Kulon Progo Regency

Over years, annual Gross Regional Domestic Product (GRDP) of agriculture sector rose from 2003 through 2006 (Table 2). Tough in 2005 the government of Indonesia released fuel subsidy withdrawal which raised inflation in all products, GRDP of Kulon Progo Regency still proved increase in all sectors.

Table 2: Gross Regional Domestic Product by Industrial Origin at 2000 Year Constant Market Prices in Kulon Progo Regency (Million Rupiahs)
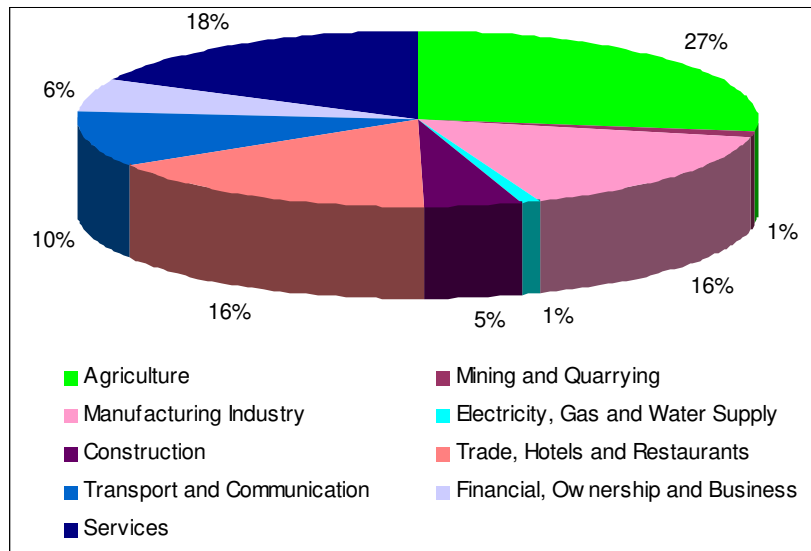
Industrial Origin	Year			
	2003	2004	2005	2006
1 **Agriculture**	374,353	388,269	403,695	413,523
2 Mining and Quarrying	13,264	12,730	13,030	18,016
3 Manufacturing Industry	220,910	224,138	236,286	243,686
4 Electricity, Gas and Water Supply	7,849	8,207	8,682	9,184
5 Construction	59,368	62,806	65,463	72,612
6 Trade, Hotels and Restaurants	219,734	227,041	240,301	249,166
7 Transport and Communication	127,596	140,402	148,459	157,776
8 Financial, Ownership and Business	73,700	84,179	89,084	90,821
9 Services	241,926	250,972	260,477	270,064
Gross Regional Domestic Bruto	1,338,700	1,398,744	1,465,477	1,524,848
Population	372,712	373,252	373,770	374,112
Gross Regional Domestic per Capita	3,591,781	3,747,452	3,920,798	4,075,914

Source: BPS – Statistics of Kulon Progo Regency

Above all increase in GRDP of 2006, agriculture sector maintain to supply regional income 27% share (figure 2). This share was provided by 67,117

households or 67.6% of 99,245 households of Kulon Progo Regency. Of course, agriculture activities have been applied as a major destiny to the people. This fact may quest the existence of other sectors that contribute so little share in GRDP.

Figure 2: Gross Regional Domestic Product Proportion by Sectors

Source: BPS – Statistics of Kulon Progo Regency, 2006

High proportion of agriculture sector confirmed most rural inhabitants applied in the sector even they are informal labors. The problem is about high rate of poverty in rural area where most people are working in farming sector. Expectation to manufacturing industry in accelerating employment absorption has been arranged by the government of Kulon Progo regency in many years; however the result was not satisfying that in GRDP of 2006 declined otherwise.

Comparing among sectors, agriculture, manufacturing industry, trade, hotels and restaurants, financial, ownership and business, and services sector showed slower acceleration 2005 to 2006 from 4.0% to 2.4%, 5.4% to 3.1%, 5.8% to 3.7%, 5.8% to 1.9%, and 3.8% to 3.7%, respectively. Hence, mining and

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quarrying, construction, transport and communication sectors showed increasing

acceleration (Table 3).

Table 3: Gross Regional Domestic Product Acceleration

	Industrial Origin	2004	2005	2006
1	Agriculture	3.7	4.0	2.4
2	Mining and Quarrying	-4.0	2.4	38.3
3	Manufacturing Industry	1.5	5.4	3.1
4	Electricity, Gas and Water Supply	4.6	5.8	5.8
5	Construction	5.8	4.2	10.9
6	Trade, Hotels and Restaurants	3.3	5.8	3.7
7	Transport and Communication	10.0	5.7	6.3
8	Financial, Ownership and Business	14.2	5.8	1.9
9	Services	3.7	3.8	3.7
	Gross Regional Domestic Bruto	4.5	4.8	4.1

Source: BPS – Statistics of Kulon Progo Regency

There are eight irrigation sources exist which are maintained by the

government instead of constructing a new irrigation channel (Table 4). These

channels are very helpful to supply water to the wet land farm.

Table 4: Irrigation Source and Irrigated Area

	Irrigation Source	Irrigated Wetland (Ha)	Sub-districts
1	Kalibawang	2,711	Kalibawang, Samigaluh, Girimulyo, Nanggulan, Sentolo.
2	Pengasih	2,120	Pengasih, Wates, Panjatan, Temon.
3	Papah	983	Sentolo, Lendah, Pengasih
4	Sapon	2,054	Galur, Lendah, Panjatan
5	Pekik Jamal	868	Panjatan, Wates
6	Clereng	143	Pengasih
7	Plelen	74	Pengasih
8	Sumitro	98	Girimulyo

Source: Office of Agriculture and Marine of Kulon Progo Regency, 2006

Water flows are derived from springs in the north and middle zone

Menoreh hills. Most of irrigated area are situated in the south zone and small part

of middle zone. In example, technical irrigation channel which connecting

Kalibawang springs to 2,711 Ha wet land in Kalibawang, Samigaluh, Girimulyo, Nanggulan, and Sentolo sub-districts showed that there are 1,763.55 Ha of wet land in the middle zone − Nanggulan and Sentolo subdistricts − compared to 947.45 Ha of wet land in the north zone that are Samigaluh, Kalibawang, and Girimulyo sub-districts.

RESEARCH DESIGN AND METHODOLOGY

A.   Data

Secondary data were provided by BPS − Statistics of Kulon Progo Regency comprised of: number of poor households in each village, number of household member in each household of villages, land ownership size including dry land and wet land farm area in each household of villages, irrigation channel, number of farmer in each village, and topographic map.

Primary data comprised of farm development by the government, rural poverty in each village, farmer experience in poverty alleviation were derived by conducting direct audience with the government officials, head of villages, field farm officials, farmer group units, and field observation.
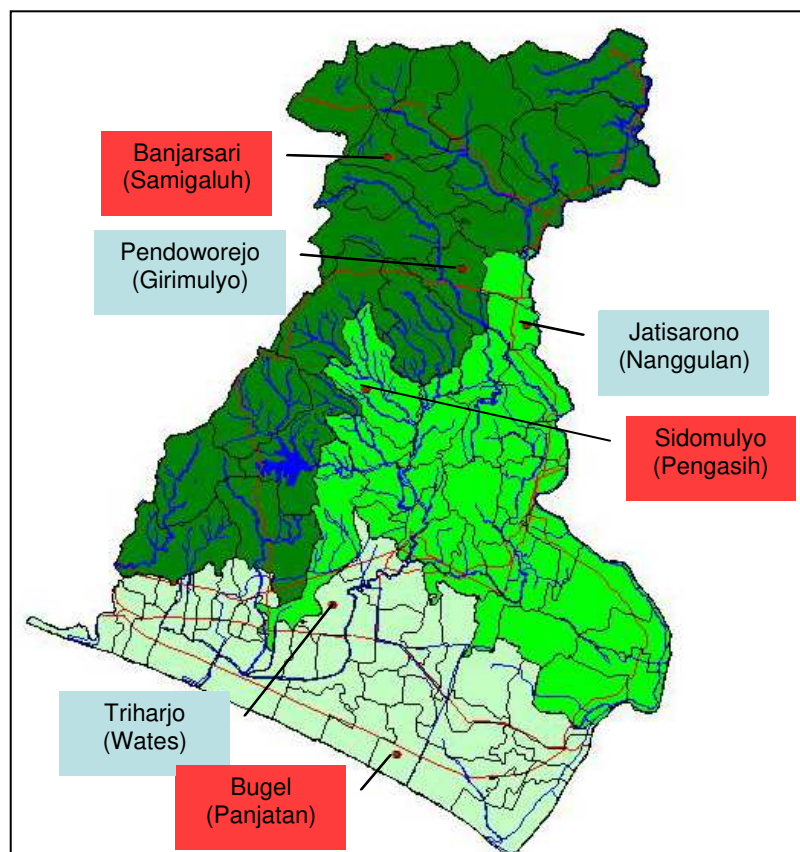
Meeting with government officials was held on May 14, 2008 in the office of Board of Regional Planning of Kulon Progo Regency where all officials connected with agriculture sector of Kulon Progo Regency discussed final result of this research findings.

B. Sampling Design

Using purposive random sampling, this research divides Kulon Progo

Regency into three sample zones according to the lowest and highest poverty level of each village (figure 3).

Figure 3: Six Samples Villages of Poor Household Distribution in Each Zone

Source: BPS – Statistics of Kulon Progo Regency, 2006

In the north zone, village with the highest poverty level is Banjarsari of Samigaluh Sub-district which is 92% and village with the lowest poverty level is Pendoworejo of Girimulyo Sub-district which is 48%. In the central zone, village with the highest poverty level is Sidomulyo of Pengasih Sub-district which is 78% and village with the lowest poverty level is Jatisarono of Nanggulan Sub-district which is 11%. And, in the south zone, village with the highest poverty level is

Bugel of Panjatan Sub-district which is 73% and village with the lowest poverty level is Triharjo of Wates Sub-district which is 11%.

FINDINGS

A. Variable and Model Tests

Regression model of rural poverty in Kulon Progo Regency shows role of each variable to explain cause matters of rural poverty. There are four independent variables, number of household member, irrigation channel, number of farmer, and land size ownership.

$$rp = \alpha_0 + \alpha_1 land\_ownership + \alpha_2 h\_member + \alpha_3 num\_farmer + \alpha_4 irrigation + \varepsilon$$

This model must follow Ordinary Least Square (OLS) principals before estimates each variables and all variables role as a model (Gujarati, 2003). Using software analysis "Eviews", this model is converted to logarithmic form and tested to have a smooth result:

Variable	Coefficient	t-Statistic	Prob.
C	-1.351770	-1.537164	0.1281
Lfarmer	0.921517	10.12418	0.0000
Lirrigation	-0.100712	-2.713637	0.0081
lnum_hhold	0.553104	1.624918	0.1080
Lownership	0.177077	2.386077	0.0193
R-squared	0.703539		
Adjusted R-squared	0.689252		

lrural_pov = -1.3 + 0.9*lfarmer - 0.1*lirrigation + 0.6*lnum_hhold + 0.2*lownership

Simultaneously, this linear regression model explains 70% of rural poverty caused by all variables. Numbers of farmer (*Lfarmer*) positively affects numbers of poor rural inhabitants (*Lrural_pov*), where the 1% increasing of numbers of

farmer will raise 0.922% numbers of poor rural inhabitants. Irrigated land (*Lirrigation*) has <u>negative impact</u> to rural poverty (*Lrural_pov*), where the increasing level of 1% irrigated land will eradicate 0.101% numbers of poor rural inhabitants. Numbers of household member (*Lnum_hhold*) is <u>not significant</u> to influence poor rural inhabitants (*Lrural_pov*). In contrary of common belief, the significant role of land ownership (*Lownership*) has <u>positive impact</u> to influence rural poverty (*Lrural_pov*), where the 1% increasing size of land ownership will raise 0.177% poor rural inhabitants. The role of each variable in model of rural poverty will be explained in the paragraphs below.

<u>Statistical Test</u>

Statistically, all variables in model are significant to influence rural poverty simultaneously. This assumption is based on F probability value is 0.00<0.05 at 5% of significance level. At 5% of significant level, number of household is not significant to influence rural poverty while numbers of farmer, irrigation, and land ownership variables are significant.

<u>Classical Test</u>

To test whether the data of this model has normal distribution, Jarque-Bera statistical value is derived to compare to significance probability percentage. Jarque-Bera value of this model is 3.94 > 0.05, then assumed that this model's residue has normal distribution. Linearity test using Ramsey Reset test proved that F-statistic probability is 0.25 > 0.05, and linearity assumption is accepted on significance level of 95%. This model obeys homoscedasticity rule where using Lagrange Multiplier (LM) test to examine multiplication of R-squared to number

of observations results 0.048 x 88 : 4.225; compared to χ^2 with significance level of 5% and degree of freedom of 4 : 9.488 > 4.225 means heteroscedasticity assumption is rejected. Meanwhile, using Breusch-Godfrey Serial Correlation LM Test, Observation * R-squared is 3.787 < 9.488 of 5% significance level and 4 degree of freedom showed that autocorrelation assumption is rejected (appendices 2).

B. Farm Development and Rural Poverty in Kulon Progo Regency

The influential position of agriculture sector was supported by 60% of dry land and 40% of wet land. Among the total land, there are only 29% of technically irrigated area to produce paddy and horticulture. In order to increase higher regional income, government should give more attention to agriculture infrastructure such as technical irrigation improvement. Reasonably, Kulon Progo regency has 28,729 Ha agricultural land of 69,627 Ha or 41% area are potential to be cultivated with more productive plants. Meanwhile, in the dry land there are 44% of all poor households live in frontier condition and possible to alleviate with more appropriate agriculture and rural development.

Much attention to develop south zone with paddy fertile suitability for many years caused late development in the north zone with low fertile land or dry land. Paddy and horticulture production identical with wet land was highest in south zone between two other zones. Meanwhile, cassava production identical with dry land was the highest in north zone (Table 5). Farmers cultivated mixed-crops to maximize their income, especially in the dry season.

Table 5: Crops Production in Three Zones (Ton)

Zone	Paddy	Corn	Cassava	Peanut	Soya Bean	Shallots	Chili
North							
Girimulyo	3,416.90	660.00	13,830.00	275.20	79.13	13.45	4.71
Kokap	579.60	125.00	8,955.00	446.25	44.00	87.90	33.08
Kalibawang	6,297.20	2,240.31	9,103.68	19.13	575.42	0.00	61.46
Samigaluh	6,185.76	2,090.09	8,143.69	83.16	6.47	0.00	72.04
	16,479.46	5,115.40	40,032.37	823.74	705.02	101.35	171.29
Middle							
Nanggulan	9,928.80	413.18	1,900.00	15.43	2,040.00	0.00	0.00
Sentolo	11,412.00	10,273.27	1,887.50	57.69	315.81	647.95	323.75
Pengasih	6,540.00	7,463.15	5,647.40	408.20	105.60	153.70	105.05
Lendah	6,503.42	1,890.00	2,944.50	64.10	455.91	142.45	61.82
	34,384.22	20,039.60	12,379.40	545.42	2,917.32	944.10	490.62
South							
Temon	11,426.00	645.00	1,978.10	657.67	74.00	488.90	2,358.40
Wates	8,823.94	30.00	30.00	45.58	31.00	395.50	452.33
Panjatan	15,650.27	270.00	332.20	53.09	0.00	575.50	792.98
Galur	9,218.21	165.00	120.94	20.51	322.66	196.20	103.63
	45,118.42	1,110.00	2,461.24	776.85	427.66	1,656.10	3,707.33

Source: BPS – Statistics of Kulon Progo Regency, 2006

Irrigated area in the south zone, middle zone, and north zone are 4,423 Ha or 42% of 10,408 Ha, 3,020 Ha or 60% of 5,035 Ha, and 1,093 Ha or 8% of 13,285 Ha, respectively. Comparing to the productivity among south zone, middle zone, north zone are 10.2 ton /Ha, 11.4 ton/Ha, and 15.1 ton/Ha, respectively. Paddy productivity in the north zone was higher than south zone; it is a preliminary proof to propose more serious farm development in the hilly north zone.

When population of Kulon Progo Regency was growing, its pressure to the land was getting immense. Large scale of land ownership was getting smaller that influenced by inheritance culture of Javanese that distribute land to each descent. The number of household member plays a significant role to decrease land size

ownership in each household (Geertz, 1983). In average, rural people have four to five members in each household.

Despite of mainly emphasized on wet land productivity, there was policy to dry land farm improvement in the north zone. In the late of 1970's, the government began to improve dry land farmer productivity through wood and fruit plants aid. Over years, farmers have been used to cultivate mixed crops and struggle in sufferance of calories daily requirement. They have been experience with coconut, clove, and cocoa (Table 6).

Table 6: Harvested Area and Plantation Production

Crops	Yield Area (Ha)	Production (Ton)
1 Coconut	14,606.50	24,155.00
2 Coffee	816.30	275.75
3 Clove	1,766.05	282.90
4 Cocoa	1,994.51	593.80
5 Tea	265.57	295.85
6 Pepper	18.13	5.88
7 Vanilla	10.10	3.45
8 Sugar Cane	438.58	2,111.81
Total	19,915.74	27,724.44

Source: Office of Agriculture and Marine of Kulon Progo Regency, 2006

Rural residents in the north zone gather and sell raw coconut grain. Buyers come to the village periodically. Farmers accumulate coconut, cocoa, pepper, and vanilla and wait for buyer. Seasonal plants such as clove will be harvested in every eight months.

Farmers enjoyed high market price of clove not until 1992 when in the early 1993, government established a new agency called Clove Trading Regulator (Badan Pengatur Perdagangan Cengkeh – BPPC). Farmers must obey new

regulation of harvesting and selling scheme via this agency. In contrary, buying price of this agency was much lower than the world's market price and former usual price. Many farmers felt very dissappointed and cut down clove trees sporadically. They replaced clove trees with wood trees.

Over years, rural inhabitants have been used to keep money and store traditionally in livestock form. Accordingly, when government launched Late Developed Village Presidential Instruction Project (IDT – Inpres Desa Tertinggal) in 1998 as poverty alleviation program to recover post monetary crisis, farmers admitted to this program. This village development project relieved farmers with cattle aid program as revolving fund. Nowadays, there some major livestock are goat, cow, and sheep (Table 7).

Table 7: Small and Big Cattle Production

Livestock	Production
1 Cow	45,318
2 Buffalo	408
3 Horse	68
4 Goat	74,612
5 Sheep	23,698
6 Pig	772

Source: Office of Agriculture and Marine of Kulon Progo Regency, 2006

Goat and sheep are prepared to sell usually in the Idul Adha Day – Moslem Prophet – when many moslems intend to sacrifice animal to the God. In traditional and small-land farm area, farmers utilize cow power to plough rice field.

Most of farmers manage cattle selling to handle huge amount payment such as school fees of their sons and daughters, health cost, or wedding party of

their sons and daughters. To fulfill incidental or daily fund requirement, rural people are used to borrow money to usurer. Debt accumulation will be repaid by selling cattle or wood yield.

Different than natural resources constraint of bedrock soil type in Gunung Kidul Regency, Kulon Progo Regency farmers are supported by relatively fertile soil with major constraint is water insufficiency that affect plant types option. Some commonly planted trees are Jati, Mahoni, and Sengon (Table 8).

Table 8: Wood and Tree Production

Tree Types	Production (m3)
1 Jati	18,070.070
2 Mahoni	7,417.430
3 Sonokeling	1,667.640
4 Akasia	325.452
5 Sengon	4,125.630
6 Others	232.540

Source: Office of Agriculture and Marine of Kulon Progo Regency, 2006

Farmers gained wood source income in at least ten years after cultivation. They sell wood trees to the mobile buyers who will visit village and bring cutter machine. Many requirements come from furniture store. Rural people may be better to create wood product in handicraft form or other valued items instead of selling as log items alternatively.

Besides wood plants, forest environment gives another income to farmers, such as firewood, bamboos, and honeybees (Table 9).

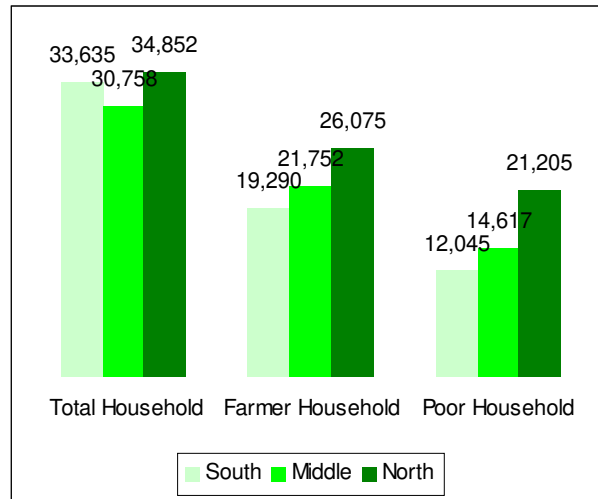**Table 9: Non-Wood Forestry Production**

Commodities	Production
1 Honey Bee (litre)	1,700.00
2 Natural Silk (kilogram)	19.00
3 Swallow (kilogram)	650.00
4 Burnt Wood (m3)	58,245.30
5 Kayu putih (liter)	612.00
6 Bamboo (m3)	182,125.00

Source: Office of Agriculture and Marine of Kulon Progo Regency, 2006

They are not planted but exist in forest around rural area. Even though, those items are clearly desired by most human living however the weakness of government promotion strategies influenced low market and less value absorption. Many buyers are still farmers relatives not fixed consumers confirmed that regional products are not competitive yet.

In figure 4, comparing inter zones farmer household to poor household showed that the increase of farmer household is followed by the increase of poor household. Instantly, this fact is an affirmation of many research results that even tough Indonesia is namely as an agrarian state, farmers are still neglected due to agricultural policies dominantly laid to the capitalism of market. After have been used to apply in-organic fertilizer, the government reduced fertilizer subsidy, then productivity of land decreased gradually. The increase in farmer household will descend people's welfare level, in particular of small land farmers.

Figure 4: Comparison of Total Household, Farmer Household, and Poor Household in Kulon Progo Regency

Source: BPS – Statistics of Kulon Progo Regency, 2006

This problem is very urgent when the Indonesian government plans to reduce poverty in farm sector. Farmers face poverty situation because the difficulties of natural endowment. Some of them are precipitation, land slope, and soil fertility. Farming activities in the north zone and part of middle zone are very dependence on the low level of precipitation mainly in dry season, where the dry land cannot support horticulture or paddy crop. Dry season could occur in more than eight months annually. Mixed crop yield that is expected by most farmer gives very small amount of earning.

In this duration, commonly farmers make debt to usurer. The accumulation of debt will be repaid by selling cattle and wood. Usually, in Idul Adha day – the Moslem holy day – many buyers come to the village for buying goats, sheep, and cows. Farmers breed cattle for incidentally purpose such as student fee in new academic year, medical cost, and son's or daughter's wedding party. Wood plant

can be cut down after some years, in example: mahoni tree has much value after attained the age of ten years.
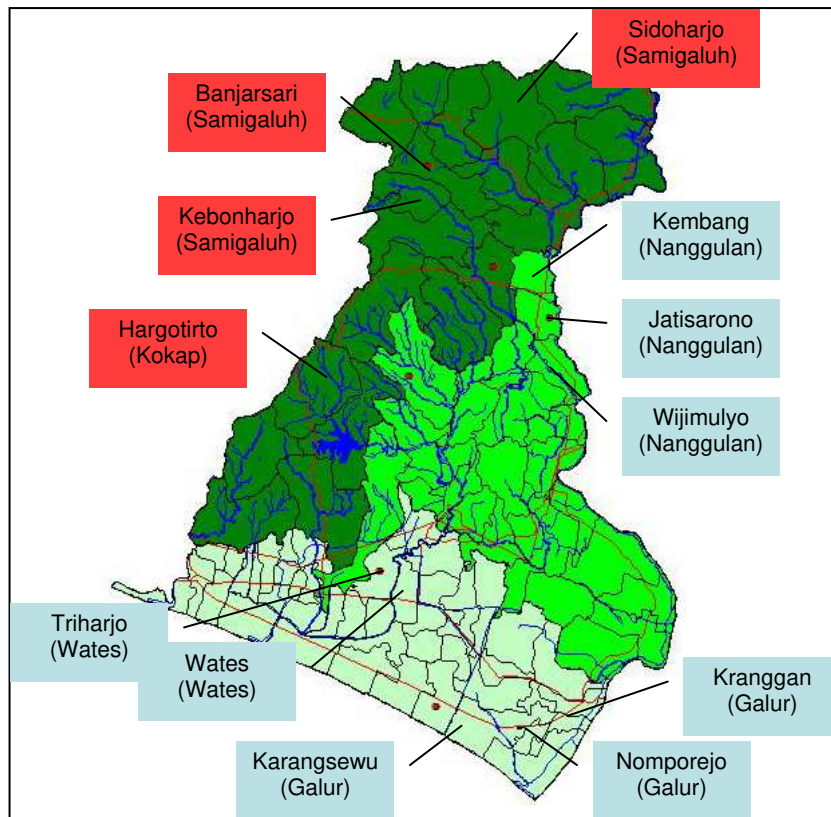
Despite natural endowment constraint, farmer facing small size of land ownership that only 0.4 ha/family in the north zone, 0.18 ha/family in the middle zone, and 0.3 ha/family in the south zone. Theory of diseconomy of scale explains variable cost in order to plant crops will be higher on the smaller size of the land.

In the other hand, theory of marginal rate of return reveals the reason of low productive of farming activities compared to industrial sector. Traditional farming which using simple ways such as: cow, buffalo, and hand-tractor; affected by high price of farm machines, where most of farmers are small-size ownership farmer with low capabilities to buy and use machines.

Land size problem and low productivity of farming which occurred in the north zone could be solved by farmers in the south zone where productivity of wet land is higher than that of the dry land. Farmers in the wet land are able to plant and yield harvest crops in every month without water scarcity problem.

The average of poverty level in the north zone is 61%, decreasing to 48% in the middle zone and 36% in the south zone respectively (figure 5).

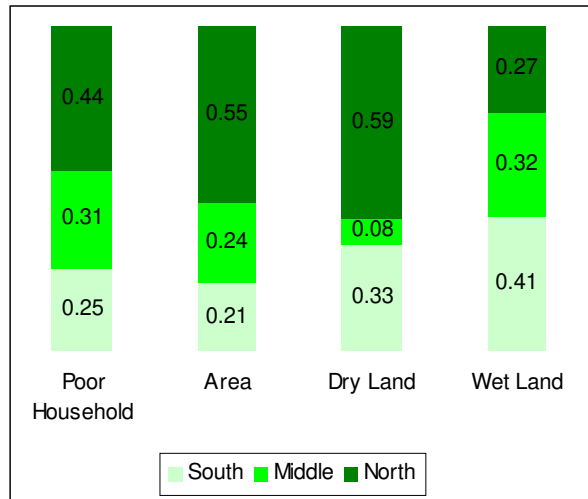**Figure 5: Distribution of Poor Villages in Kulon Progo Regency**

Source: BPS – Statistics of Kulon Progo Regency, 2006

Villages with poverty rate below 20% are mainly situated in the south zone and the middle zone. In contrary, villages with poverty level above 80% are located in the north zone. Low level poverty in the middle zone affected by axis road connecting villages of Nanggulan Sub-district to Purworejo Regency, Magelang Regency, and Sleman Regency which is used to trade agriculture yield to the broader market.

Most poor household are residing in the north zone which is 44%, the lower is 31% residing in middle zone, and the lowest is 25% in the south zone respectively (figure 6).

Figure 6: Comparison of Poor Household, Zone Area, Dry land, and Wetland in Kulon Progo Regency
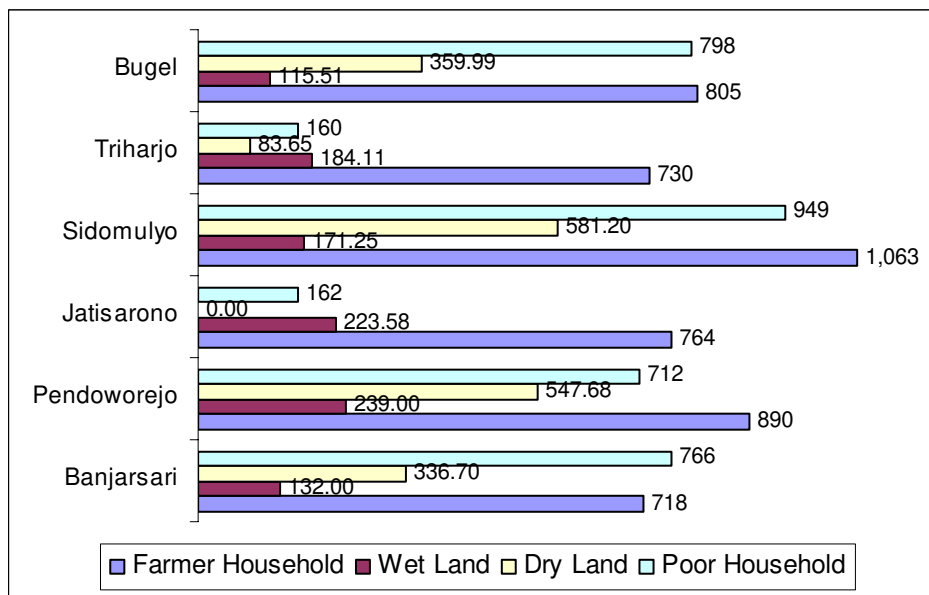

Source: BPS − Statistics of Kulon Progo Regency, 2006

With 55% of the total area, 44% of poor households are residing in the north zone, where 59% of their land are dry land and only 27% are wetland. Ironically, with 55% of total land, there are 44% poor households are living in the north zone. Meanwhile 59% of dry land pushes them to the poor level though they have 27% of wetland.

In the middle zone, with 24% of total area, there are 31% of total poor households are living in 8% of dry land and 32% of wetland. Moreover, in the south zone, compare to the two zones, with 21% of total land there are only 25% of total poor households are living in 33% of dry land and 41% of wetland. It is make sense that dry land influences poor level.

Villages with dominantly wetland have small number of poor households while villages with more dry land have bigger number of poor households (figure 7).

Figure 7: Sample Villages on Farmer Household, Wetland, Dry land, and Poor Household Comparison

Total land ownership including wetland and dry land does not effect poverty rate because the higher rate of wetland cause the lessen poverty rate. The bigger proportion of wetland in a village, the lesser poor households are found, reversely. In contrary, more poor households settle villages with much proportion of dry land.

In brief, rural poverty in Kulon Progo Regency is directly or indirectly caused by many factors. However there are some other variables outside existed, this research addresses some proven variables toward rural poverty as stated below (table 10).

Table 10: The Causes of Rural Poverty in Kulon Progo Regency

Causes	Effect
1. Limited knowledge	Persistency in poverty is caused of rural inhabitants have no other source of income except farming and it has been applied as their culture.
2. Small land ownership	The inheritance culture makes farmland size is decrease toward the numbers of member in each family and resulted in the low productivity of small farmland (marginal rate of return).
3. Aid/ loan dependency	Over years, farmers have been given with ease of loan/ aid facilities without much guidance of usage, and then they became dependency on it.
4. Wet land biased policies	Recent agriculture programs are mainly targeted to increase paddy and horticulture production in the wet land rather than to solve poor farmers in dry land.
5. Technical irrigation facility	Rural poverty is particularly situated in dominantly dry land villages, in contrary in dominantly wet land villages.

Source: Field Survey, 2008

C. The Impact of Regional Policy on Farm Development and Rural Poverty

The agricultural programs reflect government emphasizes on wet land farming. The existing infrastructure of irrigation system in wet land area mainly in the south zone and part of middle zone supports horticulture and rice farming. Meanwhile, dry land farmers in the north zone that their land provides water to the south zone and part of middle zone, obtain less irrigation system development. Even though, the colonial built irrigation system in the past, however recent governments should assemble new irrigation system in the hilly north zone. Todaro (1981), strongly suggest that a direct attack on rural poverty through accelerated agricultural development is necessary to raise rural living standards.

In the past, farmers and agriculture officials were tightly cooperated in the scheme of helping farmers to provide foods, increase prosperity, and lead to environmental sustainability. At the stage of government policies to push farmers in following global inquiry to rice and food based farming, farmers started to refuse government policies since they thought that their land has unique local resources among others.

Dry land farmers in the north zone tried to use green revolution that sometimes over than normal dosage. Therefore, over years, this habit meant to harmful to the origin fertility of the land. This habits were supported by farm subsidies policy for pesticides, an-organic fertilizers, and insecticides. Despite of farm subsidiaries, the government was also easily providing farm loan facilities. When farmers experienced with harvest failure, they cannot afford this system any longer because they were not given with independency knowledge. As many research suggested, government should taught the farmers to learn from their local knowledge and respected to their attempts. In fact, farmers so tightly dependent to the government projects. Rural residents appreciate loan as one of the consumption supply rather than productive resolving. There is an obstacle to pursue rural development where rural residents ask their local government to assist them with money instead of working freely.

Even though those above policies are mainly targeting into wetland farming, the government of Kulon Progo Regency still recognizes dry land farming through some programs with purpose to strengthen farmers' economy

such as: treatment and production improvement on coffee, coconut, clove, cacao, and vanilla, Jathropa curcas cultivation development assistance, and seed aid.

Those dry land purposive programs mere benefited to the farmers income in the long term, however as showed in the statistical data, most of upland farmers in the hilly north zone are still trapped in poor condition. This serious problem is implied by the small size farmland that limits farmers' ability to cultivate extensive farming rather than intensive farming. So, those programs will never be well implemented if the governments do not solve farmland size problem and meet local distinctiveness.

The governments are eager to increase farmers prosperity but in the other hand those programs are not particularly suitable to the farmers requirement. According to the local endowment - less rainfall in the upland – dry land farming should be addressed with more breakthrough programs such as: constructing upland irrigation system tough takes much funds.

CONCLUSION, SUGGESTIONS, AND LIMITATIONS

Most poor people presently reside in rural areas. The rural poor are exposed to many risks while often lacking instruments to manage them adequately, and so are highly vulnerable. Providing appropriate risk-management instruments and supporting the critically vulnerable is thus one key pillar in an effective and sustainable rural poverty-reduction strategy. Such provision better allows the able-bodied to engage in high risk/higher return activities and thus with good fortune to move out of poverty. A framework must, to be adequate, involve

multiple strategies (prevention, mitigation, coping) and arrangements (informal, market-based, public) for dealing with risk, and instruments that take account of the sources and characteristics of rural risk.

A. Conclusion

1. Agricultural policies are mainly targeting into wetland farming in the south zone and part of middle zone.

2. Statistical data proved the increasing of numbers of farmer in the Kulon Progo Regency will raise the numbers of poor rural households. Large scale of land ownership was getting smaller that influenced by inheritance culture of Javanese that distribute land to each descent. Therefore, in the long term, the number of household member plays a significant role to decrease land size ownership in each household.

3. Regression model results land ownership positively affects rural poverty. Taking interview with some key persons in the six villages compared to statistical data explains that poverty rate is affected by dry land productivity rather than wet land productivity.

B. Suggestions

1. Farmers in the hilly north zone need irrigation system to increase their farming productivity. Government should pay attention to increase welfare level of dry land farmers rather than mainly emphasized on the wet land in the south zone.

2. Farmers may try to change fragmented farming to aggregated or collective land farm in order to minimize production cost rather than land reform.

3. Government should reform in-organic into organic farming system and emphasize on local seed and farming methods according to distinction of local endowments.

C. Limitations

1. This research does not take into account the structural cause of poverty which might be dominant in the Newly Order regime.

2. The sociologic of farmers which is frequently assumed as a major factor to influence farmer's acceptance toward agricultural policies is not included in this research.

3. Historical stages of farm development occurred over years are not extensively revealed in this research despite of capturing 2006 poverty data and recent feature of farm development.

4. The distance from sub-district and regency offices which might be relevant to affect the development process and result is not considered in this research.

5. The recent impact of fuel price increase to the raise of poor households is not cited in this research.

6. Farm exchange value that frequently assumed as an evidence of poor farmers inability to confirm the other kinds of life requirement is not exposed in this research.