

Research Article

Analysis of the factors affecting the poverty in rural areas around gold mine areas in West Sumbawa Regency

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Abstract: West Sumbawa Regency is one of the regencies that are rich of natural resources managed by PT. Newmont Nusa Tenggara. However, local communities around the gold mine areas have generally to date been poor. This study was aimed to (1) examine the effect of material poverty, physical weakness, isolation, vulnerability, and powerlessness on poverty, and (2) describe the distribution of rural poverty based on land slope maps in gold mine areas in West Sumbawa Regency. This study applied a survey technique, observation, and structured interviews to collect data. The processing and analysis of data was carried out by a quantitative method using a multiple regression analysis. The results of the study showed that the factors significantly affecting the poverty among rural communities around gold mine areas were material poverty, physical weakness, isolation, vulnerability and powerlessness ($R^2 = 0.715$). However, the mostly dominant factor affecting the poverty was powerlessness ($t = 19.715$). Meanwhile, the distribution of poverty based on topographic sites showed that the poverty occurred in villages with plain topography (Goa Village), terrain topography (Maluk Village), wave topography (Belo Village), and hilly topography (Sekongkang Bawah Village). The poverties occurred in all the villages were mostly affected by powerlessness with t values of 3.489, 13.921, 11.828, and 6.504, respectively. This condition was due to minimum access and communication by local communities to local government and the gold mining company of PT. Newmont Nusa Tenggara.

Keywords: *factors, poverty, rural areas, gold mine areas*

Introduction

West Sumbawa Regency is one of the important regencies in West Nusa Tenggara Province related to the existence of gold mining company PT. Newmont Nusa Tenggara. Its existence affected the whole economic growth in West Nusa Tenggara Province. According to Prijono (2015), the economic growth in West Nusa Tenggara Province is relatively better than that of previous years. The economic growth rate for mining sector in 2014 was 5 per cent. The prohibition of concentrate export by PT. Newmont Nusa Tenggara affected the province's economic growth, but the existence of PT. Newmont Nusa Tenggara given the highest contribution on Gross Regional Domestic Products (GRDP) in West Nusa Tenggara Province. However, the economic growth led to the increasingly wide discrepancy among local communities, where open economy

can only be utilized by the more advanced region, sector, or group. In fact, the discrepancy in development requires solution through the affirmation and empowerment of small economic actors significantly.

Therefore, the local communities deserving to the feasibly high level of welfare amidst the increasingly high rate of economic growth and did not give positive impact on the realization of people prosperity. According to Soemodiningrat (2009), poverty is a collective responsibility, so that the efforts to eradicate it require the active involvement of all parties.

The existence of the gold mining company PT. Newmont Nusa Tenggara has actually had the impact on economic growth in West Nusa Tenggara Province. It is different from the results of a study by Ibrahim (2008), indicating that economic growth did not positively affect the

development of villages in the areas directly benefiting from the existence of the gold mining company. The data show that the characteristics of underdeveloped villages in West Sumbawa Regency varied in accordance with their topographic characteristics. This condition shows that villages in the regions with hilly topography were 62.5% more than those in plain regions (47.05%). In fact, the villages with hilly topography were characterized by the underdeveloped conditions compared with those in plain villages. It means that the villages around the gold mining areas with hilly topography were characterized by the under developed conditions.

It is expected that the development of villages after the issuance of Law Number 6 Year 2014 on Village can give effect on change in the village community welfare. Generally, national development should emphasize an integrated development that cannot be separated from village development activities, considering that the concentration of population is still dominantly in rural areas. Villages are the main bases of socio-economic and political powers that are necessary to pay attention seriously by government. The rural condition with a low level of welfare leads to many perception of village community life.

Village communities, particularly in those around the gold mine areas, have directly negative effect on local communities. According to Utama (2015), corporate activities had direct effect on the community life around the gold mining areas, particularly environmental pollution, fresh water, and infectious diseases. The results of the study show that the location of gold mine had the condition that harmed the surrounding community. In fact, the condition of local communities shows the low level of welfare. This was strengthened by the results of a study by Riadi (2007), indicating that CSR implemented by PTNNT was to date not maximal. There are still many poor local communities with income under 1\$ a day.

The phenomenon of poor community around the gold mine areas in West Sumbawa Regency has still been high. Based on the poverty line and the percentage of poor people in West Sumbawa Regency (Table 1), the rate of poverty in the region with a motto of "Pariri Lema Bariri" was high. Based on data of poor population from 2006 to 2010, most had the highest rate of poverty. In fact, West Sumbawa Regency has natural resource such as gold mining, but the poverty in the region has also been high compared to other regencies with no natural resources as the sources of local income.

Table 1 The Poverty Line and the Percentage of Poor People

Category (Years)	Poverty Line (IDR)	The Percentage of Poor Population (%)	The Number of Poor Population (People)
2006	193,913	30.5	29,058
2007	212,859	28.63	26,735
2008	217,218	24.27	25,170
2009	269,356	23.01	24,336
2010	310,586	21.82	25,100

Source: The Central Bureau of Statistics of West Sumbawa Regency, 2012

The data show that the number of poor population was still high, although the region has natural resources that can be utilized by communities. Considering this condition, it is important to study the factors affecting the rural poverty around the gold mining areas in West Sumbawa Regency and the distribution of poverty based on topographic characteristics of village, so it has implications on the policy in terms of poverty eradication and targeted sustainable program.

Methods

This study was conducted at a meso level, including regency and each administrative village around gold mine areas in West Sumbawa Regency as analysis unit and a micro level using household as an analysis unit. It used a survey method. Data required for the analysis of village at the meso level using secondary data. The micro analysis was carried out using the primary data with household as analysis unit. The primary data were collected from sample of household found using a proportional sampling technique, approximately 10 per cent of total household population (Table 2).

The study was carried out in Jereweh, Maluku and Sekongkang. The regions were deliberately selected as the sample sites of the study by considering that they are included and adjacent to the gold mining areas. The villages around gold mining areas were Sekongkang Bawah Village in Sekongkang Sub district, Maluku Village in Maluku Sub district, and Belo Village in Jereweh Sub district. The selection of Jereweh, Maluku and Sekongkang sub districts as the sites of the study was carried out by a purposive sampling technique, i.e. the selection in accordance with the purposes of the study. The sample was determined in four villages, including: 1) Maluku Sub-district was represented by Maluku Village with terrain

topography. 2) Sekongkang Sub district was represented by Sekongkang Bawah Villagewith hilly topography. 3) Jereweh Sub district was

represented by two villages, i.e. Goa Villagewith plain topography and Belo Villagewith terrain topography.

Table 2. Distribution of population and sample of villages and households in the sites of the study

Classification	Plain	Terrain	Wave	Hilly	Number
Sub district	Jereweh	Maluk	Jereweh	Sekongkang	3
Village	Goa	Maluk	Belo	Sekongkang Bawah	4
Number of RT/Village	410	450	390	420	1670
Number of RT Sample	41	45	39	42	167

Source: Secondary data analysis 2013

Table 2 shows that population in each sample village was selected by a proportional sampling technique. The determination of household was 10 per cent of the population (167 respondents). The distribution of sample households in the sites of the study were as follows: 41 RT in village with plain topography, 45 RT in that with terrain one, 39 RT in that with hilly one. The analysis was performed to examine the factors affecting the poverty distribution at each village with difference based on topography by a quantitative method using a multiple linear regression analysis. In the study, five factors (material poverty, physical weakness, isolation, vulnerability, and powerlessness) were assumed to affect poverty in rural areas as a dependent variable.

Multiple linear regression analysis was one of the multivariate statistical tests used to analyze metric data [interval/ratio scale] in a functional relationship of independent variables and one dependent variable. A linear regression equation model in the study was as follows:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5$$

where

- Y = Poverty
- X₁ = Material poverty
- X₂ = Physical weakness
- X₃ = Isolation
- X₄ = Vulnerability
- X₅ = Powerlessness

To accelerate and facilitate the calculation of constant value and coefficient of regression, a program SPSS for Windows Version 22 was used. In the statistical calculation, the coefficient of multiple linear regressions was shown by the determination value of R². The value of R² shows the high level of ability of all independent

variables in explaining variation in values of dependent variable.

Results and Discussion

The establishment of West Sumbawa Regency based on Law No. 30 Year 2003 has many fundamental problems because it was included into 199 regency with 'underdeveloped' category (The Ministry of Under developed Regional Development Acceleration, 2005). However, the development has been implemented as the gold mining region with the impact on other sectors. The existence of mining sector played an important role in the development of West Sumbawa Regency. It can be seen from the contribution of mining sector in 2007-2011, indicating that the average contribution was 94.47%.

West Sumbawa Regency has great natural resources, particularly gold mining sector. The mining was operated by PT. Newmont Nusa Tenggara as one of the large mining areas in Indonesia. Therefore, the economic contribution was not only to the regency's Gross Regional Domestic Products, but also on the regional context of West Nusa Tenggara Province. PT. Newmont Nusa Tenggara is a joint venture in Indonesia with stocks owned by Nusa Tenggara Partnership (Newmont & Sumitomo) (56 per cent), PT. Pukuafu Indah (Indonesia) (17.8 per cent), and PT. Multi Daerah Bersaing (24 per cent), and PT. Indonesia Masbaga Investama (2.2 per cent). Newmont and Sumitomo acts as the operator of PT. Newmont Nusa Tenggara (<http://www.ptnnt.co.id>).

Factors affecting the rural poverty around the gold mining areas

Poverty occurred in rural communities as indicated by the inability to meet basic needs, particularly food, residence and clothing. It could

also be seen from the insufficient infrastructure and facilities and inadequate living standard that cannot be met by the local community. The living standard in local communities were directly associated with the low level of health, morality, and self-esteem of the poor people. The poverty-related problems are increasingly complex because the characteristics were multidimensional, requiring the integrated eradication efforts. Therefore, the efforts should be multidimensional in nature by considering the various main factors affecting the rural poverty.

The factors affecting the rural poverty of local communities around the gold mining areas in West Sumbawa Regency were those adopted from Chamber (1983), i.e.: 1) material poverty, 2) physical weakness, 3) isolation, 4) vulnerability, and 5) powerlessness. Therefore, a multiple linear regression analysis was carried out to examine the effects of independent variables (material poverty, physical weakness, isolation, vulnerability, and powerlessness) on the dependent variable (poverty) (Table 3).

Table 3. Multiple regression coefficients for powerlessness, physical weakness, isolation, material poverty, vulnerability

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.846 ^a	.715	.706	3.87714	.715	80.805	5	161	.000

a. Predictors: [Constant], Powerlessness, Physical Weakness, Isolation, Material Poverty, Vulnerability

Table 3 shows that the multiple regression coefficient was 0.846 and F-Value was 80.805 with a significance of 0.000 (<0.005). It means that material poverty, physical weakness, isolation, vulnerability and powerlessness simultaneously had positive and significant effect on rural poverty. All the independent factors examined significantly affected the dependent factor with R square of 0.715, meaning that 71.5 per cent of the rural poverty around the gold mining areas in West Nusa Tenggara Regency have actually been affected by material poverty,

physical weakness, isolation, vulnerability and powerlessness in a simultaneous manner. In addition, the remaining 28.5 percent (100%-71.5%) of the rural poverty was caused by other factors that are not included into the model of the study. Thus, the effect of the independent variables on the dependent variable was significant (>50 per cent). Furthermore, the effect of each independent variable on the dependent variable was different as shown by t-values in Table 4.

Table 4. Regression coefficient and T values for material poverty (X₁), physical weakness (X₂), isolation (X₃), vulnerability (X₄), and powerlessness (X₅)

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
	[Constant]	20.225	5.157	0	3.922	0.000
X1	Material Poverty	0.062	0.048	0.054	1.274	0.204
X2	Physical Weakness	-0.142	0.062	-0.099	-2.298	0.023
X3	Isolation	0.121	0.065	0.079	1.867	0.064
X4	Vulnerability	0.027	0.057	0.020	0.474	0.636
X5	Powerlessness	1.192	0.060	0.833	19.715	0.000

a. Dependent Variable: Poverty

Based on Table 4, the values of regression coefficient for each independent variable varied. The standard errors in Table 4 show that constant

was 20.225 with material poverty (X₁) of 0.062, physical weakness (X₂) of -0.142, isolation (X₃) of 0.121, vulnerability (X₄) of 0.027, and

powerlessness (X_5) of 1.192. Based on the values, if all the independent variables have zero values, the dependent variable has a total score for poverty of 20.225 with the following multiple linear regression equation.

$$Y = 20.225 + 0.062X_1 - 0.142X_2 + 0.121X_3 + 0.027X_4 + 1.192X_5$$

The multiple linear regression equation shows Beta value, indicating that the effect of the independent variables on the dependent variable was determined based on the calculation of standard coefficient. Based on Table 4, it can be seen that value variation was different, i.e. physical weakness (X_2) of -0.099, vulnerability (X_4) of 0.020, material poverty (X_1) of 0.054, isolation (X_3) of 0.074, and powerlessness (X_5) of 0.833. Therefore, Beta value can be expressed in the following multiple linear regression.

$$Y = -0.142X_2 + 0.027X_4 + 0.062X_1 + 0.121X_3 + 1.192X_5$$

Based on the multiple linear regression equation formulated based on Beta value, the contribution of the independent factors on the dependent factors can be explained. The factor with the lowest value was physical weakness (X_2) with Beta value of -0.099, meaning that if the values of other independent variables (X_1 , X_3 , X_4 and X_5) were constant, each decrease in the factor will decrease one unit of the total poverty scores of 0.099. Vulnerability (X_4) had Beta value of 0.020, meaning that if the values of other independent variables (X_1 , X_2 , X_3 and X_5) were constant, each increase in the factor will increase one unit of the total poverty score of 0.020.

Material poverty (X_1) had Beta value of 0.054, meaning that if the values of other independent variables (X_2 , X_3 , X_4 and X_5) were constant, each increase in the factor will increase one unit of the total poverty score of 0.054. Isolation (X_3) had Beta value of 0.074, meaning that if the values of other independent variables (X_1 , X_2 , X_4 and X_5) were constant, each increase in the factor will increase one unit of the total poverty score of 0.074. Finally, powerlessness (X_5) had Beta value of 0.833, meaning that if the values of other independent variables (X_1 , X_2 , X_3 and X_4) were, each increase in the factor will increase one unit of the total poverty score of 0.833.

Based on the multiple linear regression coefficients, the effect of each independent variable (material poverty, physical weakness, isolation, vulnerability, and powerlessness) can be seen from t-value (Table 4). The effects of each

independent variable on dependent variable were significant: powerlessness on poverty ($P=0.000$); vulnerability on poverty ($P=0.636$); material poverty on poverty ($P=0.204$); isolation on poverty ($P=0.64$); and physical weakness on poverty ($P=0.023$).

Based on the results of analysis, it can be concluded that powerlessness was the factor mostly affecting the rural poverty in rural communities around the gold mine areas in West Sumbawa Regency ($P=0.000$). Thus, the hypothesis in the study was accepted that the factor mostly affecting the poverty of communities around the gold mining area was powerlessness than material poverty, physical weakness, isolation and vulnerability.

The powerlessness of rural communities around gold mining areas in West Sumbawa Regency was due to the minimum access and communication among the poor communities to local government and the gold mining company of PT. Newmont Nusa Tenggara. This was also because the poor communities had limited space for participating in social organizations amidst the communities. The powerlessness of rural communities was caused by both limited knowledge and skills owned by the local people.

Therefore, community empowerment to improve the quality of community toward a welfare society should be implemented with some considerations. According to Kartasmita (1997), the efforts of community empowerment should be implemented by, first, the creation of atmosphere or climate enabling the development of community potentials. The point here is the recognition that each people/each community has potentials that can be developed. Second, the strengthening of potential resources owned by communities. Therefore, more positive measures are required, in addition to the creation of atmosphere and climate. The strengthening includes real measures to provide various inputs and the opening of access to various opportunities that will make the local communities more empowered. Third, the empowerment to protect. In the empowerment, the weak should be prevented from becoming weaker, because the condition leads them to powerlessness in facing the strong. Therefore, the protection and affirmation to the weaker are essential in the concept of community empowerment. Rural human resource development can provide added value in sustainable development. Baiquni (2000) the diversity of rural development activities not only focus on the agricultural sector but also developed in non-agricultural businesses which is based on the existence of local resources, appropriate technology and tradition in the community.

Distribution of factors affecting the rural poverty

The analysis of factors affecting the poverty in the sites of the study was carried out on the effect of material poverty, physical weakness, isolation, vulnerability, and powerlessness on poverty. The distribution of factors affecting the poverty in the

villages studied can be used to determine the factors with dominant effect. Therefore, it can be expected that the factors can be used as the bases for strategic measures to eradicate the rural poverty in the villages. The results of the analysis of factors affecting the rural poverty in local community of Goa Village are shown in Table 5.

Table 5. Factors affecting the rural poverty of local community in Goa Village

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error			
1	(Constant)	31.580	14.719		2.146	0.039
	Material Poverty	-0.054	0.126	-0.065	-0.429	0.671
	Physical Weakness	-0.085	0.152	-0.087	-0.560	0.579
	Isolation	0.059	0.238	0.038	0.247	0.806
	Vulnerability	-0.063	0.180	-0.054	-0.352	0.727
	Powerlessness	1.055	0.302	0.522	3.489	0.001

a. Dependent Variable: Poverty

The results of regression coefficient (Table 5) show that powerlessness in the rural community was the factor dominantly affecting the rural poverty (1.055) with an error rate of 1%. It was different from the lowest condition of physical

weakness as shown by a regression coefficient of -0.085, so that the cause of poverty in Goa Village can be eradicated. The results of analysis on the factors affecting the rural poverty of Maluku Village are presented in Table 6.

Table 6. Factors affecting the rural poverty of community in Maluku Village

		Coefficients ^a				
Model		Unstandardized		Standardized	T	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	14.403	7.962		1.809	0.078
	Material Poverty	0.222	0.078	0.173	2.830	0.007
	Physical Weakness	-0.237	0.101	-0.145	-2.356	0.024
	Isolation	0.207	0.111	0.115	1.866	0.070
	Vulnerability	0.024	0.114	0.013	0.212	0.833
	Powerlessness	1.211	0.087	0.868	13.921	0.000

a. Dependent Variable: Poverty

The results of regression coefficient (Table 6) show that the values of powerlessness and material poverty in Maluku Village were the factors dominantly affecting the poverty, i.e. 1.211 and 0.222, respectively, at significance rate of 1%. It was different from the lowest level of physical weakness shown by the regression coefficient of -

0.237. Based on the results of data processing, in Maluku Village the factors dominantly affecting the rural poverty were powerlessness and material poverty. The results of the factors affecting the rural poverty of community in Belo Village were presented in Table 7.

Table 7. Factors affecting the rural poverty of community in Belo Village

		Coefficients ^a			T	Sig.
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	9.628	10.233		0.941	0.354
	Material Poverty	0.146	0.095	0.116	1.529	0.136
	Physical Weakness	-0.088	0.107	-0.064	-0.823	0.416
	Isolation	0.224	0.107	0.160	2.103	0.043
	Vulnerability	0.005	0.109	0.004	0.050	0.961
	Powerlessness	1.278	0.108	0.885	11.828	0.000

a. Dependent Variable: Poverty\

The results of regression coefficient (Table 7) show that the value of powerlessness in Belo Village was the factor dominantly affect the factors affecting the rural poverty around the gold mining areas (1.278) with error rate of 1%. The lowest condition in physical weakness was shown by regression coefficient of -0,088. The results of the data collected showed that in Belo Village the affecting of poverty was powerlessness. The results of analysis on the factor affecting the rural poverty of local community were presented in

Sekongkang Bawah Village (Table 8). The results of regression coefficient showed that the values of powerlessness in Sekongkang Bawah Village was 1.006, indicating that it was the factor mostly dominant affecting the rural poverty around the gold mining areas with an error level of 1%. The lowest condition was found in material poverty with the regression coefficient of -0.039. Based on the results of data, it can be concluded that the factor mostly affecting the rural poverty in Belo Village was powerlessness.

Table 8. Factors affecting the rural poverty of community in Sekongkang Bawah Village

		Coefficients ^a			T	Sig.
Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta		
1	(Constant)	35.233	9.960		3.537	0.001
	Material_Poverty	-0.039	0.081	-0.052	-0.483	0.632
	Physical_Weakness	-0.146	0.124	-0.134	-1.178	0.246
	Isolation	0.140	0.102	0.146	1.369	0.179
	Vulnerability	-0.221	0.133	-0.191	-1.661	0.105
	Powerlessness	1.006	0.155	0.707	6.504	0.000

a. Dependent Variable: Poverty

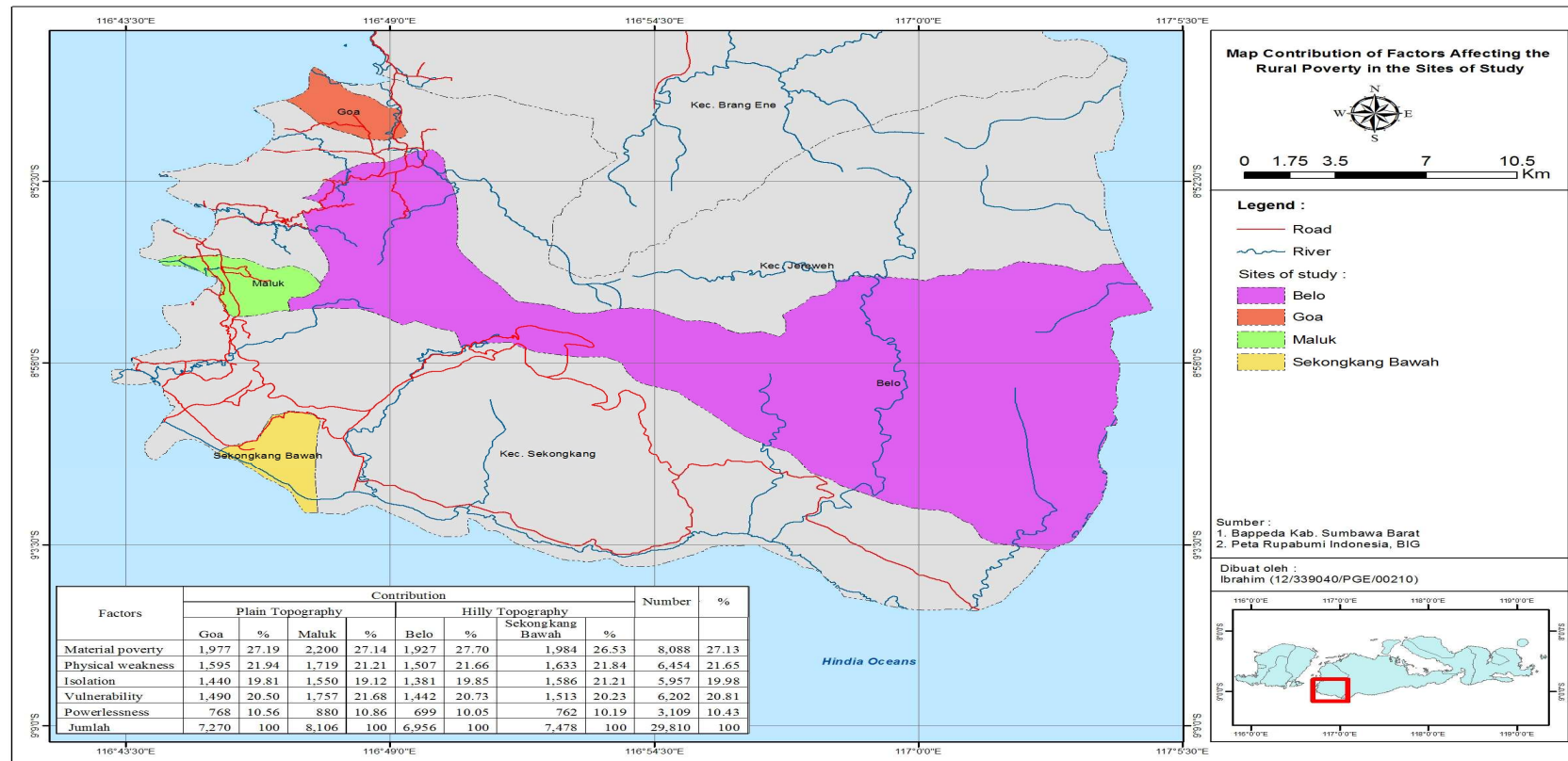
Based on the results of analysis on the factors affecting the rural poverty around the gold mine areas in West Sumbawa Regency in the four villages studied, the contribution of factors affecting the rural poverty around the gold mine areas in West Sumbawa Regency is presented in Table 9.

Table 9 showed that the distribution of the factors affecting the rural poverty around the gold mining areas in West Sumbawa Regency was based on the highest to the lowest levels. The first factor was material poverty (27.13 per cent). Material poverty was the main causing factor of poverty. It affected the poverty in rural community. The second factor was physical

weakness (21.65 per cent). The physical weakness of community was interpreted as lack of materials, being thus unable to perform activity in favor of household economy. Physical weakness can require medicine cost. It was undergone by local people and leading them to poverty through various ways, including the significantly low level of workers' productivity and the disability to work in a long time. The third factor was vulnerability (20.81 per cent), i.e. a condition where the poor people did not have mental and material preparedness in facing difficult situation undergone and the local people was susceptible, thus causing the poor people being forced to sell all the assets they owned.

Table 9. Contribution of factors affecting the rural poverty in the sites of study

Factors	Contribution								Number	%
	Plain Topography				Hilly Topography					
	Goa	%	Maluk	%	Belo	%	Sekongkang Bawah	%		
Material poverty	1,977	27.19	2,200	27.14	1,927	27.70	1,984	26.53	8,088	27.13
Physical weakness	1,595	21.94	1,719	21.21	1,507	21.66	1,633	21.84	6,454	21.65
Isolation	1,440	19.81	1,550	19.12	1,381	19.85	1,586	21.21	5,957	19.98
Vulnerability	1,490	20.50	1,757	21.68	1,442	20.73	1,513	20.23	6,202	20.81
Powerlessness	768	10.56	880	10.86	699	10.05	762	10.19	3,109	10.43
Total	7,270	100	8,106	100	6,956	100	7,478	100	29,810	100



The fourth factor was isolation (19.98 per cent) on rural poverty around gold mine areas. Isolation made the poor people living in rural areas and powerless, limited scope of activity, and unable to work in various sectors for the improvement of welfare. The fifth factor was powerlessness (10.34 per cent) on rural poverty. The effect of powerlessness on the access of poor family, among others, could be seen from the case that village elites used their power and made the poor people powerless in the distribution of aid without involving them in a consultation for consensus with local communities.

Conclusion

The results of the study showed that the factors significantly affecting the poverty among rural communities around gold mine areas were material poverty, physical weakness, isolation, vulnerability and powerlessness ($R^2 = 0.715$). However, the mostly dominant affecting the poverty was powerlessness ($t = 19.715$). Meanwhile, the distribution of poverty based on topographic sites showed that the poverty occurred in villages with plain topography (Goa Village), terrain topography (Maluk Village), wave topography (Belo Village) and hilly topography (Sekongkang Bawah Village), and the poverties occurred in all the villages were mostly affected by powerlessness with t values of 3.489, 13.921, 11.828, and 6.504, respectively. This condition was due to minimum access and communication by local communities to local government and the gold mining company of PT. Newmont Nusa Tenggara.

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