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Environmental Damage in the Valuation of Mining C to the Welfare of the People of North Aceh

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Abstract- The aim of research was to know the environmental damage and economic valuation of mining activity of C digging to the welfare of society. The parameters were observed such as; job opening, environmental damage, and community welfare. It also used regression model to see environmental damage and economic valuation of mining C on community welfare, and the value to be paid by the entrepreneurs in local government through the method of calculating production cost and rent unit. The result of the research shows that the impact of mining activity of C digest consist of the variable of job opening have positive effect to the society welfare, while the environmental damage shows negative influence to the society welfare. The regression model shows that the variable of job opening had influenced, while the environmental damage has an effect on the society welfare. Meanwhile, the total influence of both variables is the opening of employment, environmental damage to the welfare of the community.

Keywords: environmental damage, economic valuation, mining C, excavation, employment, community welfare

I. INTRODUCTION

The demand for natural resources and environmental services in the world especially in Indonesia has exceeded the carrying capacity of the earth in producing all natural resources and environmental services, while population and public income are increasing (Wackernegel et al 2002 in Dahuri 2012) . Therefore, the demand for goods and services in the future will continue to increase as well as increasingly unfulfilled from the results of the utilization of natural resources. As a consequence, the demand for utilization of natural resources in the future will also increase. Some of the facts occured in our environment today include increasing population, industrial activity, pollution, water supply, over management and other important factors. All these factors factors are interrelated components in today's life.

To achieve optimum utilization of natural resources, it is necessary to have a balance sheet of natural resources and environment which require economic valuation to the reserves of natural resource utilization and also directed how the management of resources is appropriate and efficient as possible without reducing the resources for sustainable development. Besides, the rapid economic development coupled with the installation of processing installations will also create pollution that destroys natural resources and also the man himself (Suryanto, 2009). Development as an effort to improve the welfare of society, basically an activity of exploiting natural resources and environment which will impact on change of function of environment. Therefore, patterns and ways of building will determine the magnitude of the impact that will occur on the environment (Djajadiningrat, 2011).

Mining business activities will be able to generate a positive impact and certainly result in negative impacts. Positive impacts in the form of improving the welfare of surrounding communities, creating job opportunities, the emergence of new economic activities must be developed. Meanwhile, the negative impacts can be caused by pollution and waste, they can cause diseases, dust and noise and environmental damage in the social and cultural fields (Sukandarrumidi, 92: 2010). Some environmental impacts associated with the existence of C quarry mining can be assessed from both positive and negative sides (Hasibuan, 2006). Mining activities that are technology-intensive and capital-intensive activities, are a source of foreign exchange. The economic turnaround at the time of the project will certainly stimulate the growth of the related economic sectors. Available and open jobs for the local community although the presence of migrant communities to compete can not be avoided. With the inclusion of the diverse cultures and lifestyles of everyone engaged in this mining project, it will gradually affect the social and cultural patterns of local people (Rissamasu et al., 2012). In the future development, it is necessary to see how to build mutual relations between people and the components of nature must take place within the limits of balance, if the mutual relationship is unbalanced, it will result in the destruction of the physical, economic, social and cultural environment (Sumarwoto , 1991).

Mining represents part or all of the phases of activities in the research, management and exploitation of minerals and coal covering general investigation, exploration, feasibility study, construction, mining, processing and refining, transportation and sales, and post-mining activities (Rissamasu et al, 2012) . Mining activities result in a variety of environmental changes, including changes in the landscape, changes

in flora and fauna habitats, changes in soil structure, changes in surface water flow patterns and groundwater and so on. These changes have an impact with varying intensities and traits. In addition to changes in the physical environment, mining also leads to changes in social, cultural and economic life. Mining activities also result in changes in the social, economic and cultural life of the community. Land use change, land ownership change, employee entry, and others. Management of mining impacts on the environment is not for the benefit of the environment itself but also for the benefit of humans (Nurdin et al, 2000). In this study, conducted with the aim to conduct economic assessments (Economic Valuation) mining excavation C to community welfare.

II. METHOD OF ECONOMIC VALUATION

The research was conducted at C quarry mining location, in North Aceh Regency, Aceh Province. As for the population of the generalization which consists of; the subjects have a certain quantity and characteristics set by the researchers to be studied and then drawn conclusions. Respondents in this study are: (a) Mining mining entrepreneurs C; (b) Exquisite worker C; and (c) Communities around excavation mining C. Sampling technique of respondents in this study was conducted by comvinience sampling and purposive sampling. Comvinience sampling is the decision of respondents who are easy to meet and have the ability as the respondent is the population. (Nasir, 1999).

The method of economic valuation of natural resources and environment is generally divided into two approaches (Turner et al., 1994, Navrud 2000, PSLH-UGM 2001), ie valuation using the demand approach and non-demand approach). The economic valuation with the demand-demand approach includes four methods, namely the production impact method, the dose response method, the preventive expenditure method, and the replacement cost method. Then economic valuations that do not use the demand function include contingency valuation method, travel cost method, property value method, and cost of treatment method. The ecological economic view of economic valuation is that valuation is not only related to the maximization of individual welfare, but also related to the goal of ecological sustainability and distribution justice (Costanza and Folke, 1997), Costanza (2000) states that there should be three values derived from three objectives from the assessment itself as shown in the table below presents the ecosystem valiation based on three main goals of efficiency, fairness and sustainability.

Table 1. Ecosystem Valuation Based on Three Main Objectives of Efficiency, Justice and Sustainability

Objectives/Basic Point	Respondent Group	Basic Preferences	Level of Discussion	Level of Academic Input	Specific Method
Effienciency (E-Value)	Homo Ekonomics	Preference Individual	Low	Low	Willingness To Pay
Justice (F.Value)	Homo Comunicus	Preference Community	High	Middle	Veil of Ignorance
Follow Up	Homo Naturalist	Preferences Wholistics system	Medium	High	Modelling

Source: Costanza and folke (1997) in Constanza diacu dalam Andrianto, (2005).

The purpose of economic valuation is basically to help decision makers to predict economic efficiency of possible competing uses of existing ecosystems, and for the sustainable function of linkages between economic valuations and sustainable management of natural and environmental resources diagram on (Ledoux and Turner, 2002 referred to in Adrianto, 2005). To assess the natural resources can be used the approach rent economic (economic rent) or also called the net price (net price) is the value that must be paid back to the government as an agent that takes into account the public interest and maintenance of natural resources and environment.

III. RESULT AND DISCUSSION

1. Description of exploitation of excavation C in North Aceh district C extracting is done by not having a clear standard about the ground kuntur, for example, is aken in the foothills area so that it will result in a landslide will occur rapidly so that the impact will result in the misery of the people who receive the risk as buried or the fall of the house into the location where the excavation C even the existence of rice fields of the community that sawahnya into the river approximately 5 ha that

occurred in the river Sawuek Buloh Blang District Ara Aceh Utara, so many people demanded to be returned to the form of rice fields as originally by the way the entrepreneur build embankments. In fact, many of the excavation sites are also carried out in watersheds, causing the river's lips to widen so that there are bridges crossing as it happened on the Sawang river bridge; resulting in many agricultural areas of local communities such as rice fields and plantations amblas into the river in case of flooding.

Table 2. Results of analysis of dust, noise and turbidity of river water

No	Parameter	Location				Qualuty of stnadard
		Simpang Cibrek	Cot Girek	Sawang	Saweuk	
1	Dust (µg/NM^3)	173.85	54.17	-	-	90
2	Noise dB (A)	55	50	-	-	55
3	Turbidity of water NTU	-	-	37	619	5

Source: District government environmental office, North of Aceh, 2013

2. Effects of Environmental Damage to the welfare of the Community From the result of the estimation resulted the influence of the opening of employment to the welfare of society that is partially opening of job field have positive and significant effect to society prosperity is equal to 49%. These positive results indicate that dominant respondents are more fond of and excited about the presence of C quarry mining in their area, which means the presence of C quarry exploitation mining such as sand, gravel and coral, thus opening up new jobs for local people to work as pit labor rather than working as farmers or gardening.

Table 3: Data analysis of production by mining entrepreneurs mining C

$Q_{gal\,c}$	$Q^2_{gal\,c}$	$FC_{gal\,c}$	$VC_{gal\,c}$	$TC_{gal\,c}$	$TR_{gal\,c}$	$AC_{gal\,c}$	$P_{gal\,c}$	$MC_{gal\,c}$
157	24649	120000	23550000	23670000	64050000	350000	350000	150000
168	28224	120000	25200000	25320000	70000000	350000	350000	150000
184	33856	120000	27600000	27720000	80150000	350000	350000	150000
188	35344	120000	28200000	28320000	77350000	350000	350000	150000
193	37249	120000	28950000	29070000	78050000	350000	350000	150000
202	40804	120000	30300000	30420000	70000000	350000	350000	150000
208	43264	120000	31200000	31320000	84700000	350000	350000	150000
217	47089	120000	32550000	32670000	78750000	350000	350000	150000
224	50176	120000	33600000	33720000	78050000	350000	350000	150000
229	52441	120000	34350000	34470000	82950000	350000	350000	150000
233	59729	120000	34950000	35070000	84700000	350000	350000	150000
236	55696	120000	35400000	35520000	77700000	350000	350000	150000
244	59536	120000	36600000	36720000	79800000	350000	350000	150000
246	60516	120000	36900000	37020000	82950000	350000	350000	150000
251	63001	120000	37650000	37770000	81200000	350000	350000	150000
255	65075	120000	38250000	38370000	82250000	350000	350000	150000
259	67081	120000	38850000	38970000	81900000	350000	350000	150000
264	69696	120000	39600000	39720000	82950000	350000	350000	150000
267	71289	120000	40050000	40170000	77000000	350000	350000	150000
271	73441	120000	40650000	40770000	87150000	350000	350000	150000
279	77841	120000	41850000	41970000	83307894	350000	350000	150000
4871	1105997	120000	716250000	718770000	16649578 94	7350000	350000	3007500

Explanation: $Q_{gal\,c}$ = Quantity, $FC_{gal\,c}$ = Fixed costs, $VC_{gal\,c}$ = Variabel Costs, $TC_{gal\,c}$ = Total Costs, $TR_{gal\,c}$ = Total revenue, $AC_{gal\,c}$ = Average Costs, $P_{gal\,c}$ = Price dan $MC_{gal\,c}$ = Marginal Costs.

The results of data preparation on C extract in the form of sand can be presented on the sand excavation diagram showing that the C cost of absence cost curve is
sand.

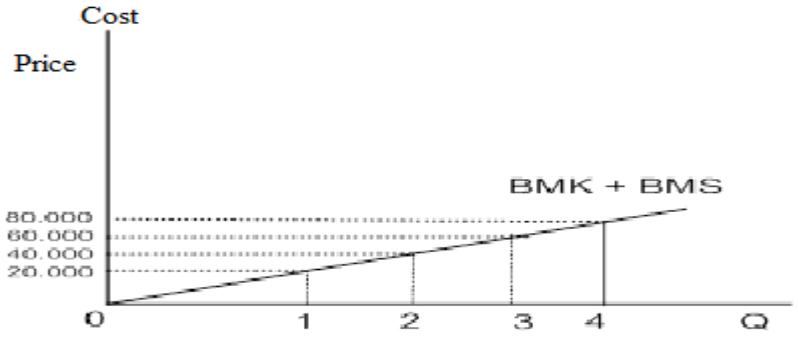

Figure 1. The Sand Chart Diagram

Increasing the use of natural resources, especially the excavation of C in North Aceh district, the average for the sand in a month is 231 trucks, and for the average price per unit of truck purchased by agents in the mining workers community is Rp. 142855. As for the average market price or the final consumer is Rp.507.142, the cost of scarcity that must be paid by the mining entrepreneurs to the local government by adding the marginal cost of BMK scarcity added with the Social Marginal Cost of BMS is Rp.20.000 per / truck, it is presented in Diagram 4.1 above

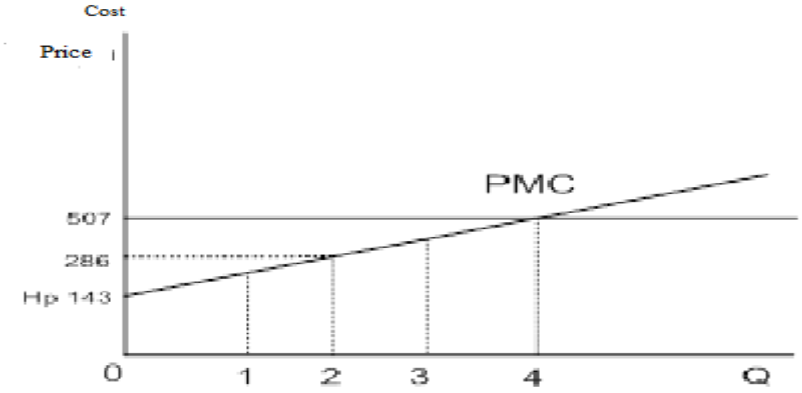

Figure2. Sand excavation diagram

Private Cost Marginal Cost PMC presented in the diagram above is the production cost generated by mining entrepreneurs excavation C in the form of sand with the price in one truck is 143,000 rupiah. continue to increase its use so that it is believed to be environmental destruction, this is not apart from the law of demand is "if the price rises then the amount of goods demanded will decrease, and if the price falls then the amount of goods demanded will increase". In law the demand for the quantity of goods requested will be inversely proportional to the price level of the goods. An increase in the price of goods will cause a decrease in the quantity of goods requested. This is because the rising prices cause a decline in consumer purchasing power and will result in reduced demand.

To answer the challenges in the future, local governments need to examine the economic sector of this environment, namely substitute goods with the aim of reducing the exploitation of excavation C, so that the environment does not degrade or better with reforestation in order to become environmentally sustainable or sustainable. This can be explained by the following figure

This.

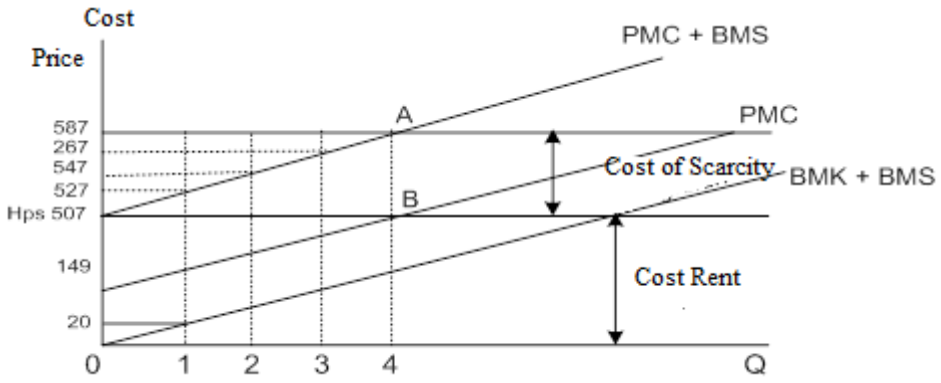

Figure 3. Diagram of sand excavation

Test t (Partial Testing) is intended to determine the influence of individually independent variables on the dependent variable. Individual Test Results (t test)

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	-15.826	7.053		-2.244	.027		
Environmental Damage (X)	.634	.400	.164	1.585	.116	.605	1.653

Dependent Variable: Welfare of Society (Y) The variable X (environmental damage) yields a t count of 1,585 with a probability significance of 0.116, the eligible result, under t table of 1.645. Thus it can be concluded that individually X has positive and insignificant effect on variable Y.

IV. CONCLUSION

1) From the results of statistical tests, it turns out that the economic valuation impact of mining activities of C in North Aceh partially positively affects the welfare of the people, and if it is partially analyzed that environmental degradation has a positive effect on community welfare in North Aceh District. There are other factors that affect the welfare of the Community in the District of North Aceh.
2) The results of the diagram can be explained by two things including:
   a) The price determined so far does not take into account the circumstances of the environment
   b) The market price has taken into consideration the compensated social costs of 10% of Rent Excavation C, the compensation cost is levied by the government as a retribution for the purpose of returning to the communities surrounding the C quarry and also the distribution of the fund should be characterized as economical, fair and sustainable

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