

# Benefit Analysis of Coal Mining in Tanah Laut Regency, South Kalimantan

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**Abstract** This study analysed the benefit of coal mining in Tanah Laut based on its economy, social and environment factors. This research was expected as a study to further formulate appropriate sustainable method in decision making on management policy, as consideration for all stakeholders in the management and utilization of coal mining. Thus it will achieve sustainable environmental management and land resources. This study describes the facts and relation among studied issues. The analysis of benefit on the mining activities used economic valuation. Status of sustainability of the mining area in Tanah Laut used public perception especially Tanah Laut community surround coal mining area. Primary and secondary data were collected from community figure, residents, academicians, and representative of the mining coal company, stakeholders, related government office in Tanah Laut (e.g. Regional Development office, Department of Forestry, Department of Environment) and environment non-governmental organization (NGO). Results showed that the employment percentage for the local labour is 3.62% of total labour households in Tanah Laut. The community development from the coal mining company consisted of infrastructure, education, community health, agriculture, social culture and sports. Local economic development is being made to increase the economy by purchase from the local community which consists of non-food products and food products that include: agricultural, fisheries, and forestry products. Total revenue from coal mining in Tanah Laut is Rp. 18,336 Billion from the tax and royalty. The benefits analysis showed that the coal mining sector in Tanah Laut is also contributed positively to the area development, especially in the sector of economy and social. However, there should be a sustainable strategy and management to countermeasure the negative impact of the coal mining activities towards the environment.

**Keywords** Benefit analysis, Coal mining, Community development, Local economic development

## 1. Introduction

The contribution of the mining sector to the non-oil Gross Domestic Product (GDP) in Indonesia continued to grow from 2004 to 2014. According to a study conducted by Indonesian Coal Mining Association (ICMA), data from Centre of Statistic Bureau showed that non-oil mining sector contributed about 3.1% of GDP increased to 6.1% in 2014. In the export structure, mining sector trend contributed 13.8% in 2014. It means four times multiplication for the last ten years [1].

Mining sector included in the sectors which have a high *multiplier effect* on the economy. The activity of mining company affects the output of income and labour or surrounds the area. The previous study mentioned that mining sector has multiplier effect 1.6-1.9 times [2]. Thus,

mining activity becomes an essential driving factor for the local economy, such as in East Kalimantan, South Kalimantan, Central Kalimantan, and South Sumatra. The mining sector creates employment, which is not only for the mining activity but also activities that support the mining, e.g. mining contractor and transport service providers. This high employment also leads to significant development in the local area, thus mining sectors called as the *prime mover* of area development, especially for Eastern Indonesia area and outside Java Island. As Corporate Social Responsibility (CSR), mining company also supports the community development and empowerment to improve the socio-economic condition of local community and area.

Mining company should also obey the environmental management and protection as regulated in local regulation or law. However, the mining activity also shows negative impact on economy, social and environment due to its mining waste, mud flood, decreased area for agriculture that leads to the decreased income for farmers [3]. Exploitation of mining industry mostly did not concern the standard environment management and environment carrying

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capacity to guarantee the sustainable economy and ecosystem.

The growth of mining sector is getting increased along with the regional autonomy to publish mining license (IUP) which regulated in the Law no. 4 of 2009. The regulation also applied in Tanah Laut Regency, South Kalimantan that published about 60 IUPs for Production Operation. Although the proposed area already enters the reclamation phase or post-mining phase, or even mining closure. It completely ignores the sustainability of environment and economy. This policy is theoretically and empirically caused the environment changed on land physiographic, abiotic and biotic factor in Tanah Laut Regency. It leads to the environmental damages which will decrease the ecosystem service for surrounding community. Department of Marine and Fisheries in Tanah Laut Regency reported in 2013 that about 660.1 ha coastal area has abrasion along 123.7 km and sedimentation in about 50 ha area [4]. Pollution also showed in the air, soil and water surround the pits. The implication of environmental problems will become obstacles for the sustainable development in Tanah Laut Regency. Thus it is important to conduct a study on the sustainability of coal mining activity in Tanah Laut Regency. This study was aimed to analyse the benefit of coal mining in Tanah Laut based on its economy, social and environment factors. The results were expected to provide information for the strategic policy about the sustainability of coal mining in the area.

## 2. Materials and Methods

### 2.1. Study Site

Geographically, Tanah Laut Regency was located at 114°30'20" – 115°23'31" E and 3°30'33" - 4°11'38" S. Total area of Tanah Laut Regency is 3,631.35 km<sup>2</sup> or 9.71% of South Kalimantan. The regency consists of 11 districts. The widest area is Jorong Districts, followed by Batu Ampar and Kintap Districts, while the smallest one is Kurau Districts [5].

Coal exploration Tanah Laut has been conducted since 1992 which started by PT. Arutmin Indonesia in the block area ex PT. Bukit Asam in Kintap and Jorong Districts. Recorded largest mining company in Tanah Laut is PT. Arutmin Indonesia and PT. Jorong Barutama Greston. Both mining area will or already in the reclamation phase and will get into mine closure soon.

### 2.2. Data Collection

This study is correlation descriptive research which accurately describes the facts and relation among studied issues. The valuation of cost and benefit on the mining activities used economic valuation. Status of sustainability of the mining area in Tanah Laut used public perception especially Tanah Laut community surround coal mining area.

Primary data collected from questionnaire and interview on general condition of the area, specific issues and problems towards the mining activities in Tanah Laut. Workshop and focus group discussion (FGD) was also conducted involving community figure, residents, academicians, representative of the mining coal company, stakeholders, related government office in Tanah Laut and environment non-governmental organization (NGO). Secondary data was collected from annual reports or research study of a related government office or NGO in Tanah Laut, such as Regional Development office, Department of Forestry, Department of Environment, and activists.

### 2.3. Economic Valuation

Contingent Valuation Method (CVM) introduced by Davis in 1963. CVM is a method to assess the economic value of a commodity that was not marketed in the general market. This method uses direct approach that basically asked the community on the value number of Willingness to Pay and Willingness to Accept as the compensation for environmental damages. CVM technique is based on the fundamental assumption of the ownership [6]. The purpose of CVM is to calculate the approximate real value of public goods with hypothesis market (questionnaire and respondents). Aggregate WTP or Total WTP can be used to estimate entire population WTP with the following formula:

$$TWTP = \sum_{i=1}^n WTP_i \left[ \frac{n_i}{N} \right] P \quad (1)$$

Description:

TWTP = The Willingness of Total Population to pay

WTP = Willingness to Pay

n = number of samples that willing to pay WTP

N = number of sample

P = number of population

I = sample number –i

#### 2.3.1. Employment

Percentage of employment can be measured by dividing the total work day of labour by the total household multiply with work day [8]. The employment rate of the coal mining company in Tanah Laut was calculated with following Formula.

$$\text{Employment} = \frac{\text{Total Local Labour in Tanah Laut} \times \text{Total Work Day}}{\text{Total Household} \times \text{Total Work Day}} \times 100\% \quad (2)$$

#### 2.3.2. Infrastructure Development

Fund for the development of infrastructure was converted to the current value by multiply it with deposit interest rate plus one and raised with the difference in expenditure in 2015 with the deposit interest rate of Bank Indonesia 7.5% period April 2015.

### 3. Results and Discussion

#### 3.1. Coal Mining in Tanah Laut

The existence of coal mining industry in Tanah Laut Regency area that still active is PT. Arutmin Indonesia and PT. Jorong Barutama Greston. The industrial development is indirectly courage local community to use the employment in the mining activities. Residents which previously work in agricultural or fisheries sector, altered into services sector. The existence of the mining industry also attracts labour outside the area, thus diverse the community. The alteration occurred due to the decreased area for agriculture, thus affecting their economy. But the visible changes that occurred are the landscape or land use change. Forest and agricultural land opened into mine pit, thus affect the environment quality. The changes lead to specific impacts on socio-economic and environmental factors due to the mining activities [7]. Thus it is important to assess the benefit of the coal mining activities, which explained further in following sub-chapter.

#### 3.2. Benefit Analysis on the Coal Mining in Tanah Laut

##### 3.2.1. Employment

The analysis is based on the employment of both coal mining company, i.e. PT. Arutmin Indonesia and PT. Jorong Barutama Greston. In the production activities, the employment was divided into two types of employee, i.e. permanent employee and outsourcing employee.

Total of permanent employee in 2014 at both companies is 2,736 persons, which 86.27% is local labour (South Kalimantan). The remains are outsourcing employee which come from companies that cooperate with PT. Arutmin Indonesia and PT. Jorong Barutama Greston. Total of 74.7% of the total employee is outsourced. Calculation of employment percentage for the local labour is 3.62% of total labour households in Tanah Laut. The employment did not differ based on gender, thus the calculation has ignored the gender.

##### 3.2.2. Community Development

For the coal mining activities, the two companies have social responsibilities for the community development. Implementation of the program is the part of company's performance improvement, to maintain the continuity of operational, build the positive value of the company towards the community, and to maintain harmonious relations with stakeholders. The community development encompasses infrastructure, education, community health, agriculture, social culture and sports.

The community development covers the improvement of infrastructure in Tanah Laut Regency. The fund was taken from the profit of the companies. Along 2011 to 2013, the realization of the community development program reached Rp 62,791,868,827. The implementation included the mosque construction, road paving, vehicle for community

services, support in the construction of meeting hall and government building. The cost of infrastructure development in Tanah Laut Regency is Rp 65,695, 774, 235.78.

Education development is needed for the human resources quality improvement. The program of community development in education sector consisted of scholarship for low-income children from elementary to higher education, library for each district, facilities for schools, and teacher training and workshop. Detail of the funding was described as follow (Table 1).

**Table 1.** Budget for the Development in Education Sector

No	Program	2011	2012	2013
1	Scholarship	280,968,800	310,920,800	350,600,250
2	Library	210,960,500	280,800,500	300.750,200
3	Facilities	320,250,820	440,900,800	490,000,850
4	Competence development for teacher	340,900,000	350,000,000	380,650,000

Source: Annual Report of the companies in 2014.

Community health in Tanah Laut tend to have bad healthy status and nutrition, thus the companies make it target for their community development program. The budget for the community health funding detailed in following Table 2.

**Table 2.** Budget for the Development for Community Health

No	Program	2011	2012	2013
1	Improve nutrition for children and maternal	120,680,100	131,900,800	150,650,200
2	Community health	230,960,500	280,860,000	310,500,000
3	Medical tools	220,220,200	310,500,000	330,000,800
4	Health education	240,200,000	250,600,000	280.,600,000
5	Competence development of paramedic	140,222,000	270,820,000	310,800,000

Source: Annual Report of the companies in 2014.

The agriculture sector is the main source of occupation. The existence of coal mining is directly affecting the agriculture sector, such as the decreased land area, land use change, and occupational changes. The development of orchard, forestry, fisheries and farming is included in this sector. Thus, for the agriculture sector to maintain or improve the productivity, the community development program arrange following budget for agriculture development (Table 3).

The positive impact from the coal mining activities in Tanah Laut Regency is it also courage the development of culture, art, and sports in Tanah Laut. The program to conserve the traditional culture was conducted by creating annual carnival in august independence moment. The companies also funding the traditional art performance that

held by the community. In sports, the companies support the local soccer club by funding their coaching and competition. Total funding in period 2011-2013 for the social culture and sports reached Rp 9,850,700,280.

**Table 3.** Budget for the Development for Agriculture Productivity

No	Program	2011	2012	2013
1	Workshop and development	480,968,800	510,920,800	550,600,250
2	Facilities and tools	210,960,500	280,800,500	310,750,200
3	Training human resources	320,250,820	410,900,800	490,000,850

Source: Annual Report of the companies in 2014.

### 3.2.3. Local Economy

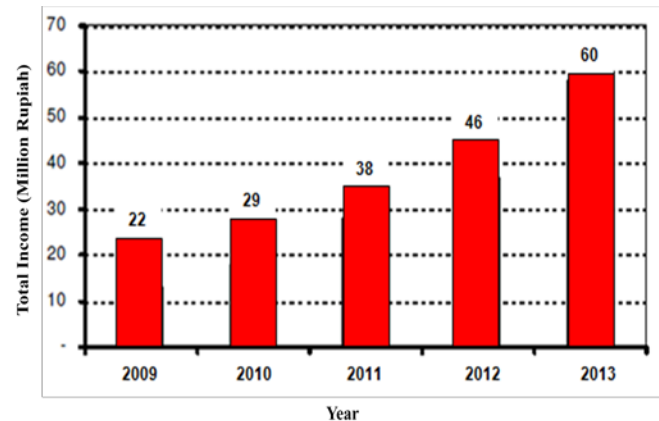
Local economic development is being made to increase the economy based on the economic potential of local communities. The program introduces a system of economic activities for the local community in order to exploit the economic potential in the region and have a sustainable source of income, besides from the mining sectors.

The needs of the mining sector obtained through the purchase from the local community which consists of non-food products and food products that include: agricultural, fisheries, and forestry products. The needs were met by purchasing from the local Micro, Small and Medium Enterprises (MSMEs) in Tanah Laut (Table 4). The increase of MSMEs income showed in Figure 1.

**Table 4.** Purchase of the Non Food and Food Products in Tanah Laut

Non Food Commodity	Million Rupiah		
	2011	2012	2013
Furniture	322	388	428
Tile roof	160	185	203
Cement	375	395	420
Iron	327	388	392
PVC pipe	119	175	181
Tire	187	191	228
Car Parts	383	385	390
Engine Oil	108	148	187
others	6,782	2,880	7,200
<b>Total</b>	<b>8,763</b>	<b>5,135</b>	<b>9,629</b>
Food Commodity	Million Rupiah		
	2011	2012	2013
Honey	72	88	102
Woods	486	490	511
Vegetables	165	185	196
Fruits	176	121	166
Eggs	105	117	128
Meat	176	192	220
Chicken	242	276	293
Tofu and Tempe	68	72	79
<b>Total</b>	<b>1,490</b>	<b>1,541</b>	<b>1,695</b>

Source: Annual Report of the companies in 2014.



**Figure 1.** Trend of the MSMEs Income in Tanah Laut under the Companies Founding

Besides purchasing from MSMEs, companies also develop local economy by corporate funding on the Community Economic Empowerment Organizations “Sejahtera”, includes a program called *Rural Income Generation Activities* (RIGA). The revolving loan in period 2011-2013 showed in following Table 5.

**Table 5.** Capital Loan for MSMEs in Tanah Laut

Transaction	Million Rupiah		
	2011	2012	2013
Loan	5,250	6,870	6,950
Loan repayment	4,780	5,990	5,220
<b>Realization (%)</b>	<b>92, 62</b>	<b>95, 54</b>	<b>97, 95</b>

Source: Annual Report of the companies in 2014.

### 3.2.4. Tax and Royalty

Tax and royalty that has been paid by PT. Arutmin Indonesia and PT. Jorong Barutama Greston on the last three years reached 13 million USD or Rp 13 Billion to the Government of South Kalimantan. It is the accumulation from the payment of royalty 2013 and 2014. It also includes the fine for the delayed payment. In the previous year, the payment reached 30 million USD (2012), while in 2011 reached 29 million USD.

Total royalty for coal mining from Tanah Laut Regency in 2013 is Rp. 8,014 billion, and the third parties contribution is Rp.10,321 billion, thus total revenue from coal mining in Tanah Laut is Rp. 18,336 Billion. While in 2014, it has been achieved Rp. 10,145 billion.

## 4. Implication

Tanah Laut Regency in the development process still requires capital from foreign investment and the private sector so that the necessary instrument of the mining industry is coal mining. Coal mines in Tanah Laut Regency are expected to contribute positively in encouraging the development of the region.

Coal mines in Tanah Laut in addition to the economic

aspect is also crucial to concern non-economic. That is necessary integrative processes of two different interests, i.e. economic aspects, and environmental aspects. Therefore, in encouraging the development, Tanah Laut Regency needed their sustainable development strategies.

The benefits analysis showed that the coal mining sector in Tanah Laut is also contributed positively to the area development. However, they should not ignore the environmental impact. To be continued to accept the benefit from the coal mining, there should be a sustainable strategy and management to countermeasure the negative impact of the coal mining activities.

## 5. Conclusions

The benefits analysis showed that the coal mining sector in Tanah Laut is also contributed positively to the area development. The employment percentage for the local is 3.62% of total labour households in Tanah Laut. The community development covers infrastructure, education, community health, agriculture, social culture and sports. Local economic development made to increase the economy by purchase non-food products and food products that include: agricultural, fisheries, and forestry products from MSMEs. Total revenue from coal mining in Tanah Laut is Rp. 18,336 Billion from the tax and royalty. Although the coal mining activities give benefits on economy and social sector, there should be a sustainable strategy and management to countermeasure the negative impact of the coal mining activities on the environment sustainability. Thus, further environment study and sustainable mining management should be done.

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