

Mining Benefit Management for Sustainable Development

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Keywords: Benefit Mining, Sustainable Development.

Abstract: The mining sector should be managed optimally from social, economic and ecological aspects. Region with mining areas should innovate in mining benefits management to achieve sustainable development. This research aims are: (1) to determine key indicators in mining benefit management to achieve sustainable development; (2) to determine the role and function of stakeholders in sustainable mining management; and (3) to formulate a mechanism of sustainable development with benefit transfer orientation. The study was conducted in Bombana District, Southeast Sulawesi Province, Indonesia from April to July 2018. It uses secondary and primary data. Primary data was obtained through Focussed Group Discussion (FGD). Data was analyzed by Interpretative Structural Modeling (ISM) and descriptive analysis. The research results were follows. First, local regulations was needed to regulate the mining benefits not used as a routine development budget but as endowments fund. Second, the reinforcement was required in mining benefits management, starting from production supervision, production cost and sales through mining benefit agencies. Third, the stakeholders involvement were needed, namely local government / local board, mining companies, NGOs, universities and communities with each roles and functions.

1 INTRODUCTION

1.1 Background

Mining sector has large contribution to regional economic growth. Mining boom in one region will increase the economic activity (Iswandi, 2014). Mining businesses contribute to country income through taxes and royalties. State can use the revenue for regional development funds. Other contribution of mining business is Corporate Social Responsibility (CSR) for community, especially those within mining ring area (Alwi, 2016 and Iswandi, 2017). Ideally, mining business contribution can become positive and reduce social problems such as decreasing unemployment and poverty, especially in areas with mining potential. Therefore, mining existence in a region is a blessing. It has contributed to solve social and economic problems in the region.

Beyond the positive contribution, mining management can also create very complex problems. Auty (2003); Hampreys (2007) and Collier (2010) argued that mining existence in a region not only gives blessings but also a resources curse for regions

that rely on mining sector as the driving force of their economy. Resources curse is characterized by high environmental degradation and pollution due to mining activities. Fauzi (2010) and Burke (2010) stated that management of non renewable resources, especially mineral mining, often causes externalities, resulting in higher recovery costs. MacMohan *et al.* (2000) in Iswandi (2017) said that cost of environmental mitigation in Indonesia from mining reaches US \$ 0.5 billion per year. Meanwhile, Fauzi (2014) said the cost of environmental degradation varies between US \$ 0.56 billion to US \$ 7.7 billion per year. It consists of various types of degradation, as water salinity, air pollution and land degradation. On other hand, capitalist system considers human beings and natural resources as a means to achieve their life purpose. Materialistic sizes are the main targets for capitalist. This understanding has spread around the world including in Indonesia. Budiati (2012); Rustiadi *et al.* (2011) and Jing *et al.* (2005) in Alwi *et al.* (2016) said that the impact of capitalism leads to welfare and incomes gaps with the implications for erosion of environment life to become not harmony.

The resource curse phenomenon is not always happened. Some countries as Norway, Alaska, Botswana, Kazakhtan, Azerbaijan and Sao Tome and Principe show a success in mining resources management and provide inter-generational welfare and justice (Sachs *et al.*, 2001; Frankel, 2012). The steps were taken by some countries to make the income source from non-renewable natural resources as a stability fund and not used as a routine development budget but used as strategic investments. The fund was known as the Natural Resource Fund (NRF) with the purpose to anticipate the resource curse.

Considering the success experience of several countries in mining management and the support of Indonesian legislation, it was needed an innovation and restructuring of mining benefit management. Similarly, Bombana regency as one of areas having gold mining potential requires good mining benefit management toward sustainable development.

1.2 Problem

This research has three issues. First, what were key indicators in mining benefits management to achieve sustainable development. Second, how were the role and function of stakeholders in sustainable mining management. Third, how a beneficiary transfer mechanism was oriented to sustainable development.

1.3 Objectives

This research has three objectives. First is to determine the key indicators in mining benefits management to achieve sustainable development. Second is to determine the role and function of stakeholders in sustainable mining management. Third is to formulate a transfer-benefit mechanism with sustainable development orientation.

2 RESEARCH METHODS

2.1 Research Location and Time

The research location was Bombana District, Southeast Sulawesi Province, Indonesia. The study was conducted from April to July 2018.

2.2 Data Collection Technique

This research uses secondary and primary data. Secondary data were obtained from various related

institutions. Primary data were obtained through Focused Group Discussion (FGD). The FGD participants were representatives from Regional Planning and Development Agency, Regional Environment Agency, Department of Energy and Mineral Resources, Forestry Service, and Agriculture and Plantation Agency (at Southeast Sulawesi Province and Bombana District level), academics, mining entrepreneurs, non-governmental organizations (NGOs), and community leaders.

2.3 The Observed Parameters

The observed parameters relates to key indicators in mining benefit management to achieve sustainable development, i.e. attributes based on FGD stakeholders' perceptions. The parameters of each attributes and parameters were given score 1 (bad), 2 (good enough), 3 (good) and 4 (very good) categories.

2.4 Data Analysis

Reliability matrix through Interpretative Structural Modeling (ISM) was used to analyze data to determine the key indicators attributes in mining benefit management. Safitri *et al.* (2014) said that ISM analysis score = 1 if there are more than half the number of respondents said the parameter to i has contextual relationship with parameter to j, the opposite has score 0. Meanwhile, descriptive analyse was used to determine the role and functionality of stakeholder in relation with mining benefit and benefit transfer mechanism.

3 DISCUSSION

3.1 Key Indicators of Mining Benefit Management

Key indicators of mining benefit management were variables to support sustainable development. These indicators were an institutional strength in mining management. Good institutionalization was the mechanism that conforms to a commonly agreed, transparent, effective and responsive organization procedure for public interest.

Sulistiyani (2004) said that to achieve a welfare rationalization related to mining management with sustainable development orientation was absolutely need responsive management for public interest. Good management was characterized by a credible

commitment to institutional goals (Williamson, 2000). In accordance with FGD results and Iswandi, *et al.* (2018), 12 key indicators of mining benefit management for sustainable regional development were identified in Table 1.

Table 1: Key Indicators of Mining Management with Sustainable Development Orientation.

No	Key Indicators	Description
1.	Utilization of effective mining benefits	Effective and useful mining benefit management
2.	Financial flow	The flow pattern in accordance with applicable mechanism or regulation
3.	Production Supervision	Ensuring the level of gold produced in every production process by company
4.	External supervision	Mining benefits managed by a particular institution (stand alone) should be audited by an external party (Financial Auditing Agency)
5.	Mining benefit management bodies	Availability of individual institutions in mining benefits management
6.	Investment placement committees	Maintaining the continuity to fulfil short term obligations (liquidity) and long term (solvency) and profit
7.	Availability of multi-stakeholder human resources	The importance of high quality human resources to manage the mining benefits from multi parties
8.	Regulation availability (Local Regulation)	Local Regulation is needed to regulate mining benefit as local perennial or generation fund
9.	Availability of mining benefits	Available funds through corporate taxes and royalty / land rent payments during mining process activities
10.	Social impact (lower social conflict)	Conflict minimization from mining management
11.	Economic impacts (increasing the regional economic revenues)	Increasing the community income and Domestic Product Bruto in Bombana District
12.	Ecological/ environmental impacts (no degradation and pollution)	The availability of internal supervisors to oversee the performance of mining benefit management bodies

ISM analysis produces Structural Model Charts from key indicators as shown in Figure 1.

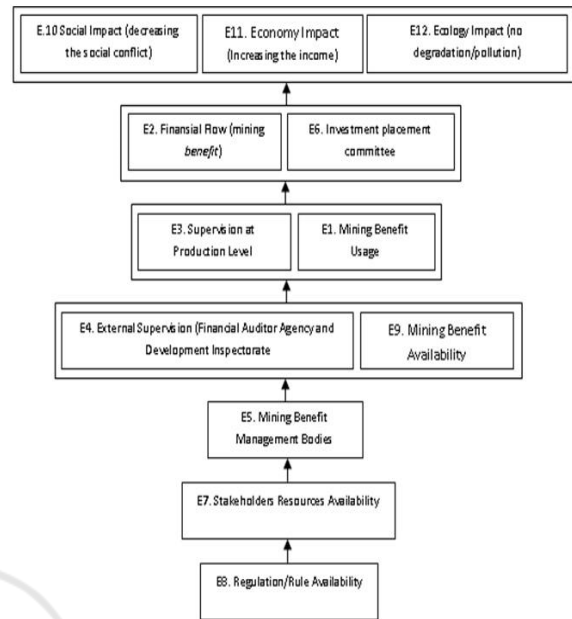


Figure 1: ISM model Diagram from mining benefit management. Sources: Iswandi *et al.* (2018).

3.2 Stakeholders Role in Mining Benefit Management for Sustainable Development Orientation

Research results found five stakeholders of mining benefit management. They are: (1) Local Government, (2) Mining companies, (3) Non-governmental organizations (4) Universities and (5) communities. Each stakeholder has roles and functions as presented in Table 2. Williamson (2000), Shultz (2004), Stiglitz (2007), Dharmawasan (2010) and Yustika (2012) stated that stakeholder involvement in public institutions can decrease the monopolistic attitudes of renter and ruler because of mutual supervision from each other.

The mining companies pay mining benefits in form of taxes and royalties to government and mineral rent as the repayment value of capital services disrupted by gold mining activities. The mining benefits should be used as a mining endowment managed by independent institutions such as the Investment Committee to determine the amount of endowment funds for strategic investment objectives, spill over effects and as a solidarity fund.

Table 2: Roles And Unctions Of Stakeholders In Mining Benefits Management.

	Local Government/Local Board	Companies	NGO	College	Society
Roles	<ul style="list-style-type: none"> Formulating and establishing a policy (Local Regulation) on mining benefit management as a Mining Funding Fund Formulating the mineral rent policy decision Encouraging the mining benefits investment in strategic sectors Monitoring / supervision of mining benefit management and corporate liabilities 	<ul style="list-style-type: none"> Providing the mining benefits (taxes, royalty and mineral rent) Reporting the mining activities (production, production costs, production sales) Providing capital and good and environmentally friendly technology for post-mining land reclamation Creating employment especially for local communities 	<ul style="list-style-type: none"> Formulating an effective benefit mining program plan Advocating and providing legal assistance / protection to mining affected communities Evaluating the company reports and performance related to tax, royalty and mineral rent Conducting community institutional education and coaching 	<ul style="list-style-type: none"> Together with other stakeholders to plan the mining benefit investment in according with local need and sustainable Together with stakeholders to institutionalize community participation in natural resource and environmental management Together with other stakeholders address the social issues and improve the community economic Developing appropriate science and technology and useful research 	<ul style="list-style-type: none"> Providing consideration in determining the benefit mining management policy in according with community needs Formulating program planning of mining benefit for sustainable development Monitoring the company's reports and performance in relation to taxpayer, royalty and mineral rents Monitoring and evaluating the implementation of mining benefit policies and programs
Function	Regulator, mediators and consultants in mining benefit management	Investors and managers of natural resources and controller of natural resources converted into mining	Advokat, companion, and social control on policy implementation	Providing Science and Technology and social control on policies implementation	As implementers of management and social control of Policy implementation

The mining benefits management should be monitored, audited and validated by state auditor as Development and Financial Examiner (BPKP) and Regional Inspectorate. Therefore, the mining benefits derived from mineral rent, taxes and royalties can be set aside as long-term endowments. The mining benefit management mechanism is shown in Figure 2.

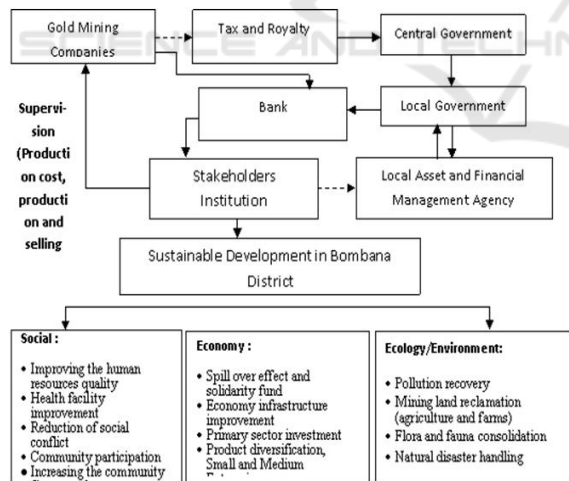


Figure 2: Mining Benefit Management Mechanism.

4 CONCLUSION

1. Local regulations is needed to regulates the mining benefits not used as a routine development budget but as endowments fund

that serve as: (a) cushion instruments due to economic shocks from mining sector; (b) a catalyst to transform from mining to non-mining sector; (c) alternative funding mechanism for regional development; and (d) reserve funds to reduce the burden of mining companies on environmental restoration.

- The reinforcement is needed in mining benefits management, starting from production supervision, production cost and sales through mining benefit agencies.
- The stakeholder’s involvement is needed, namely local government / local board, mining companies, NGOs, universities and communities with each roles and functions.

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