

**ECONOMIC VALUATION OF
PLANNED EXPANSION OF MINING AREA**

A Case of Padang Cement Factory (PT. Semen Padang), West Sumatra

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THESIS

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SUMMARY

The planned expansion of mining area of Padang Cement Factory (PT. Semen Padang) is currently proposed in the eastern part of Padang City, near Indarung, in the Sub-district of Lubuk Kilangan, or exactly in Bukit Tajarang and Bukit Tinggi. Bukit Tajarang and Bukit Tinggi could be allocated for many alternatives of utilization to support natural preservation and human livelihood. It has the stock of limestone, also has important roles as catchments area to support local people livelihood. Bukit Tajarang and Bukit Tinggi also provide other environmental services such as; carbon absorbent, prevent landslide, flood and other protection functions. However those various utilization alternatives have not been clearly studied in term of benefit. From all of possible derived goods and services, actually the true potential values of the area are not clearly identified yet. To maximize those benefits and minimize the costs, an optimum effort in natural resource management is needed.

CHAPTER I

INTRODUCTION

1.1. Background

The planned expansion of mining area of Padang Cement Factory (PT. Semen Padang) is currently proposed in the eastern part of Padang City, near Indarung, in the Sub-district of Lubuk Kilangan, or exactly in Bukit Tajarang and Bukit Tinggi (PT. Semen Padang, 2007). Geologically, Indarung and the surround area could be categorized as alluvium propeller area and have main function as water catchments area (Center for Environmental Studies of Andalas University and PT. Semen Padang, 1990). Although most forest is situated in limestone hill, the trees and other vegetations grow well. It can be seen from high density of vegetation in this forest that could reach *climax*¹. The *climax* can be identified by the presence of full life cycle of those vegetations (Center for Environmental Studies of Andalas University and PT. Semen Padang, 1990)

Based on a research carried out in 1990, it found 80 trees in Bukit Karang Putih Forest. Some of them have high economic value as timber such as *Castanopsis* sp. (*paning-paning*), *Eugenia* spp. (*kayu kalek*), *Shorea* spp. (*Amelastium karuyit*), and *Litsea robusta* (*madang kuniang*). Beside that, an endemic plant named *Cyrtandra* sp. was also found in this forest. This plant is the specific species for limestone area. In addition, some endanger and protected animals also found in this area such as *Buceros* sp. (hornbill), *Hylobates agilis* (*ungko-agile gilmanii*), *Panthera tigris sumatrae* (Sumatran tiger), *Semnopithecus melalophus*

¹Climax is the final, stable, self maintaining and self-reproducing state of vegetational development (Barnes, Zak, Denton, and Spurr, 1998).

(*simpai*), and *Naemorhedus sumatrensis* (wild goat) (Center for Environmental Studies of Andalas University and PT. Semen Padang, 1990). This biodiversity would be under threat if any development project conducted in this area, especially if it leads to deforestation.

The presence of PT. Semen Padang (PT. SP), the biggest and the only mineral manufacture in Padang, does not only bring positive impacts for local people by providing employment opportunities and infrastructure development (e.g. school, road, hospital, mosque and etc.), but it also brings negative impacts. During monsoon (from October until December), there is possibility that the sediment from limestone mining in Bukit Karang Putih and silica mining in Bukit Nigiau flows in to the irrigation canal that is located in the river basin area of Padang Idas River and Batang Arau River. The sediment then accumulated in irrigation canal in Lubuk Sarik and Lubuk Hantu² on the term of Total Suspended Solid (TSS) reached 438.5 – 1175.4 mg/L. This accumulated sedimentation decreased the productivity of 140 Ha of rice field about 15 - 20 % per annum (Research Center of Andalas University and BPPT Sumbar, 2001).

The river's discharge is also increasing. It indicates degradation in the upper course of the river, marginal land is increasing, which mostly because of mining. In the flood discharge flow phase, the rivers which are located in Baringin, Koto Lalang and Tarantang Villages could not retain the discharge flow and overflow from the river body to the rice field bringing the sediment from upper course of the river. Moreover, in the extreme condition, it can destroy bridge, dam and even flooding Padang City (Research Center of Andalas

²Lubuk Sarik and Lubuk Hantu are the sub-river basin of Batang Arau River

CHAPTER V

CONCLUSION AND RECOMMENDATION

5.1. Conclusion

This study is aimed to identify the best scenario with regards to the natural resources management in the new SIPD area using total economic value, economic feasibility criteria, local people perception as social consideration, and the compatibility between the new mining plan to the biophysical and environmental condition and city spatial plan. Based on the analysis of the data, some conclusions could be drawn as follow:

1. The annual total economic value (TEV) from different scenario showed that, the highest TEV was given by a full mining area scenario i.e. Rp.4,854,667,098,214.29, meanwhile the lowest TEV was found in full protected scenario which gave Rp.27,673,429,610 per annum. In other hand, the selective use scenario produced about Rp.1,632,765,984,461.85 per annum.
2. Based on financial and economic feasibility point of view, the entire scenarios are feasible and profitable for 56 years period. The full mining scenario would have 5.81 for BCA and NPV on 10% interest rate is Rp.72,456,859,957,334.80. Full protected forest scenario had 15.86 for BCA and NPV at 10% interest rate is around Rp. 1,092,807,816,004.10. Meanwhile the selective utilization scenario would give 2.62 for BCA and

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