

## ABSTRACT

Sawangan and Mungkid sub-district are area which potentially produce sand and stone located at Magelang Regency. The area in Sawangan and Mungkid which indicated sand and stone deposits are at Apu River and Pabelan River. Some of them have been exploited by the government or investors, while the sand and stone deposits have not been exploited because of the lack of information about the potential and the investment must be spent to take advantage of this potential.

Sand and stone potensial resources are calculated using cross section method. Based on calculation the indicated mineral resources of sand and stone deposit are 18.721.786,95 m<sup>3</sup> and measured mineral resources are 9.429.611,18 m<sup>3</sup>. The Production target is planned  $\pm$  1,8 bcm/ year with 5 years of mine life that planed would be mined by open mine system. Sand and stone mining plan at Sawangan and Mungkid need to be conducted an economic analyze to know the economic feasibility of the project.

Economic analysis methods that are used are Net Present Value (NPV), discounted cash flow Rate of Return (DCFROR), and Pay Back Period (PBP). Capital Investment needed to finance this project are 60.607.351.211 Rupiah. The composition of equities are 60% own capital and 40% loan capital with minimum interest rate ( $i^*$ ) 14%. Mining equipments and support equipments that are used are held by the company investment.

After the feasibility analyze was undertaken using analyze method that was determined, obtained the following results:

NPV	: 92.772.726.526 Rupiah
DCFROR	: 86,99 %
PBP	: 1,32 years

From above can be understood that NPV is positive, DCFROR higher than the minimum interest rate ( $i^*$ ) by 14% and PBP shorter than mine life, it was concluded the mining project is feasible to be implemented.

Sensitivity analysis conducted on sand and stone price change and also operating cost. Percentage changes from the both parameter are respectively the increase and decrease of 5%, 10% and 15%. Normal sand and stone price is 60.000 Rupiah /m<sup>3</sup>.

At the time of sand and stone price falling that reached 15%, it was down to 51.000 Rupiah, sand and stone mining is still feasible to do with NPV 48.393.636.088 Rupiah, ROR 53,65% (greater than  $i^* = 14\%$ ) and PBP for 1,81 years. At the time of operating costs rising that reached 15% so the cost of mining operations rose to 23.800 rupiah, sand and stone mining is still feasible to do with NPV 79.202.396.069 rupiah, 75,63% ROR (greater than  $i^* = 14\%$ ) and PBP for 1,48 years.

In ceteris paribus conditions, break even happen when sand and stone price fell by 31,36% i.e. at a price of 41.186 Rupiah/m<sup>3</sup> or at the time of the operating costs rose to 102,55% or at 41.919 rupiah/m<sup>3</sup>.

In sensitivity analysis, although the change of NPV, PBP and DCFROR large enough due to changes in prices of sand and stone price and operating cost, but do not cause the project to be not economically feasible to consider. It can be concluded that the project in Sawangan and Mungkid is not sensitive to price change and operating cost, and based on analysis of criteria mining area, mining area in Sawangan and Mungkid sub-district belongs to the region of mining development (WKKKP).