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The Economy and Environment Program for Southeast Asia (EEPSEA) was established in May 1993 to support training and research in environmental and resource economics across its 9 member countries: Cambodia, China, Indonesia, Laos, Malaysia, Papua New Guinea, the Philippines, Thailand, and Viet Nam. Its goal is to strengthen local capacity for the economic analysis of environmental problems so that researchers can provide sound advice to policymakers.

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Is Coal King? An Environmental and Economic Assessment From South Kalimantan

EEPSEA POLICY BRIEF • No. 2007-PB2

Coal mining is an engine of economic growth in many developing countries, but it is also responsible for a great deal of environmental pollution and social disruption. A new report from Indonesia has looked at the impact of coal mining on the economy and environment of the province of South Kalimantan – one of the country's most important ➔

A summary of EEPSEA research report RR2007-02, 'The Impacts Of Coal Mining On The Economy And Environment Of South Kalimantan Province' by Luthfi Fatah c/o : Faculty of Agriculture Lambung Mangkurat University, Jalan Jenderal Ahmad Yani PO Box 1028 Banjarbaru 70713 South Kalimantan Indonesia, Telephone/Fax +62 511 477 2254, Mobile +62 815 2830 7633. Email: fatah@aciara.gov.au

"Policy makers should..."

➡ coal producing regions. It also investigates what policy options will best reduce its negative environmental impacts at least cost to the province's economy.

The study, by Luthfi Fatah of Lambung Mangkurat University, finds that mining is one of the most significant part of the province's economy and that it is steadily growing in importance. However, it also shows that the industry disproportionately benefits the better-off sectors of society and is having an unacceptable impact on the environment. Fatah recommends that policy makers slow the growth in coal mining through regulation of small-scale mining. This should help the environment. He also suggests that the government boost investment in agricultural-based activities to improve the employment prospects of the poorer sectors of society.

Coal In Kalimantan

South Kalimantan Province is one of the main coal producing areas in Indonesia and is responsible for over 16% of national coal stocks. The coal mining boom in the province began in the 1990's, driven by the rising price of coal, the ready availability of coal deposits and supportive government policies. Three large-scale coal-mining contractors operate alongside smaller mining concerns that often do not have licences. In 2004 there were over 840 of these small businesses and

Summary of Simulation Policies

No.	Policy	Government Expenditure	Tax	Subsidy	Investment/Capital
1	Stricter regulation of the small-scale miners	+5% on government and small-scale coal industry	-10% on small-scale coal industry		
2	Enforcing more stringent codes of mining management practices on all miners in the region	+15% on government and coal industry	+10 on coal industry		
3	Redistributing royalties and other revenues to lower income families in the region		+20% on coal industry	+15% on lower income households	
4	Implementing land rehabilitation programs	+5% on land rehabilitation	+15% on coal industry		+10% on forest and agriculture
5	Introducing mine rehabilitation bonds	-5% on land rehabilitation			10% from coal industry

their number is growing. The coal industry in South Kalimantan is mainly for export; only two plants in the province use coal as their power supplies and they use less than 6% of South Kalimantan's total coal output. The rest is exported to other regions of Indonesia and to other countries.

Coal mining in South Kalimantan is a profitable sector of the economy that creates employment and foreign currency income. There is, however, little authoritative information available on how the industry affects income distribution across the social spectrum. From an environmental point of view it is clear that the industry creates a wide range of social and environmental problems. Strip mining is the most common method used in South Kalimantan and this contributes to land

degradation and forest cover destruction. Other problems linked to mining include water supply contamination, air pollution and road damage. Critics of the industry argue that it produces a dwindling supply of low quality jobs and causes significant health problems for local people.

Assessing The Impact Of Coal

In light of the concerns relating to coal mining, it is vital that policy makers have the right information to make informed decisions relating to the regulation and taxation of the mining industry. To get this information, a Social Accounting Matrix (SAM) was used to analyze the impact of the coal mining industry on the economy in South Kalimantan Province. It was also used to test

slow the growth in coal mining."

the impact of five alternative policies for the regulation of the coal industry; and to highlight those policy choices that would support economic development and environmental sustainability in the province.

The SAM allowed a detailed analysis of the mining sector and its interaction with other sectors of the province's economy. It also allowed an assessment of the flow of income and its distribution within various household categories. In other words, it allowed an appraisal of how important mining is to the overall economy of South Kalimantan, how much of the money generated by mining gets to individual households and what percentage of the benefits produced by the industry leak to other provinces of Indonesia or overseas to other countries. It also assessed the differences between large and small-scale mining companies.

The research used data on households and industry, obtained from primary and secondary sources. Household interviews were conducted in all twelve districts of the province and the information obtained was used to construct a model of household income and expenditure. Interviews were also conducted with forty large and small companies linked to coal mining. Secondary data was collected from various private and public institutions such as the Provincial Statistical Bureau of

South Kalimantan. These included data on industrial inputs and outputs and employment.

The Importance Of Coal

The study found that coal mining is a major element in the province's economy and is growing in importance. This is clear across a number of key economic criteria. For example the coal industry contributes IDR 2,966,456 million into the province's economy (in terms of money generated by both labor and capital). This is the third largest contribution to the province's economy after industry and agriculture. Moreover, if the large-scale and small-scale coal mining companies are combined together, their share of the output of South Kalimantan Province is the highest of all industrial sectors. Indeed, the overall contribution of the mining

industry to the province's output is 18% of the total and is valued at IDR 12,419,188 million. An assessment of investment in the region, makes the importance of coal mining even clearer. Over 30% of all the money invested in South Kalimantan Province (which totalled IDR 5,493,183 million) was invested in coal mining.

The economic benefits produced by mining are not, however, uniformly spread out across the social spectrum. Coal mining is more profitable for non-farming households and tends to generate more profits for those with higher incomes. Moreover, the employment provided by the industry does not necessarily benefit those who live near to mines (and so have to deal with the environmental pollution they produce). It was found that most of the workers in coal



An Ex-Mining Hole with a Stockpile in the Background

mining come from outside the immediate vicinity of the coal mines in which they work, many of them from other provinces.

In terms of environmental impact, small-scale mining was found to have a lower impact than large-scale mining. This is not because small-scale coal mining companies are non-polluting or because they implement particularly good environmental clean-up practices. It was mainly due to the fact that the small-scale companies exploit fewer resources than the large-scale ones.

Which Way Forward?

To look at ways of improving the environmental and environmental impact of mining, Fatah simulated the effects of five hypothetical policies. These were: 1) Stricter regulation of small-scale miners; 2) Enforcing more stringent codes of mining practice for all miners; 3) Redistributing royalties and other revenues to lower-income families; 4) Implementing land rehabilitation programs, and; 5) Imposing mine rehabilitation bonds.

Of these five policies, two stand

out. Scenario 3 is economically the most favourable strategy but it results in increased environmental destruction.

Scenario 1 produces the largest favourable environmental impacts for all indicators but has some negative economic effects. Thus, an initial analysis does not reveal a "win-win" solution but rather a trade-off between an economy-friendly policy and an environmentally-friendly one.

However, the social accounting matrix allows us to look in more detail at these impacts. After all, it is not only the direction of the impacts but their magnitude that matters. On the whole, the negative impacts of Scenario 1 are relatively mild and may be an acceptable price to pay for significantly improved environmental performance.

Although coal mining dominates the economy of South Kalimantan in terms of value added and output, this sector, together with other mining activities, absorbs only 2% of the working population. The contraction of the industry that Scenario 1 would produce would

affect a very small number of workers. And the households most affected by the contraction would be the relatively rich ones.

In the real world, win-win policies are scarce. More often we must be willing to make hard tradeoffs between desirable but incompatible outcomes. Of the policies assessed, Scenario 1 (regulation of small-scale mining) seems preferable. It produces the best environmental performance of the five options investigated. It does have economic costs but these would be borne by those most able to afford them. And in the long run, the province may be able to attract investment into new activities, ones that provide healthier and less dangerous jobs. Implementation of this policy could be a first step in that direction.

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