ECONOMIC AND ENVIRONMENTAL IMPACT OF FLY ASH DUMPING AT LAKVIJAYA POWER STATION IN SRI LANKA

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Lakvijaya Power Plant is the only coal-fired power plant in Sri Lanka. In general, coal power plants have negative effects towards the environment during the power generation process. Lakvijaya Power Station continuously emits fly ash and bottom ash as by-products of its coal burning process. The ash content of the coal used at Lakvijaya Power Station is 15%, and it gets converted into fly ash and bottom ash at a ratio of 9:1 on average. The low quality fly ash that gets produced cannot be sold to cement producers, and therefore, it has to be dumped in the power plant premises thus causing economic and environmental issues. With this background, there are three objectives of this study: evaluating the economic impact of fly ash dumping compared to fly ash selling, identifying the environmental impacts of ash dumping compared to fly ash selling, and identifying the possible solutions to mitigate the negative economic and environmental impacts of ash dumping. Primary data were used to analyze the socio-environmental effects of fly ash dumping, while secondary data were used to identify the financial feasibility of ash selling instead of ash dumping. Primary data were collected using field visits, which included direct observations and focus group discussions. The purposive sampling method was employed to identify the focus group among villagers and plant staff. The sample included 40 villagers from Narakkalliya and Norochcholei and 17 workers employed at the power plant who do not live in the two concerned villages. Under data analysis, financial cost benefit analysis (NPV), Cost-benefit analysis for non-valued and non-quantified effects (non-financial analysis) and Environmental Impact Assessment (EIA) were conducted to identify the economic and environmental impacts of fly ash dumping. Under the financial analysis, the payback period was found to be three years, which is a short period of time (less than 5 years), and that shows that fly ash selling is financially viable compared to ash dumping. According to the non-financial analysis, the net effect of ash dumping was found to be negative compared to ash selling, which means that ash selling is economically effective. Moreover, EIA shows that ash dumping in the ash yard causes an adverse environmental impact. Therefore, it could be pointed out that the selling of fly ash would result in mitigating all these adverse impacts, thereby ensuring a better condition for the environment. According to the financial and non-financial analyses, it could be concluded that fly ash dumping leads to negative economic and environmental impacts, and that therefore, fly ash selling as opposed to dumping entails positive economic and socio-environmental consequences. Therefore, measures to improve the quality of fly ash, which could then be sold, could be identified as a possible solution to the problem. The quality of fly ash could be enhanced by increasing the capacity of the air system to enable a complete combustion in the furnace.

Keywords: Fly ash, Economic Impact, Environmental Impact