

## Contribution from major power plants to air pollution in two major city centres in Colombo

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Today, large cities are recognised as having a significant bearing on the problem of air pollution that can cause poor health, reduce visibility and contribute to the general deterioration of cities. It is therefore a matter of great importance to identify the sources contributing to air pollution in cities in order to take mitigatory measures. This paper describes a theoretical approach made to identify the contribution from electricity generating thermal power plants to air pollution in major city centres with high population density within the Colombo metropolitan area. The study was focused to identify the influence of effluents from three major power plants viz. Sapugaskanda, Kelanitissa and Agrico Paliyagoda during the North-east monsoon period (December to February).

Meteorological parameters taken during the North-east monsoon periods of 1997 and 1998 in Colombo were used to develop a meteorological data file in a manner suitable to run the Australian air dispersion model AUSPLUME. Power generation statistics were calculated and co-ordinates of two peak polluted locations Fort and Maradana were obtained. Then the dispersion model "AUSPLUME" was used to evaluate the contribution of those three power plants on the concentrations of SO<sub>2</sub> and NO<sub>x</sub> as NO<sub>2</sub> at Fort and Maradana.

The results indicate that nearly 30% of NO<sub>x</sub> concentrations in Fort and Maradana are contributed by thermal power plants when they are operating at maximum capacity, while the contribution of SO<sub>2</sub> is nearly 4%. The model calculation predicts that the already approved diesel power plant in Kelanitissa, when operates at its average capacity of 110 MW, would increase the SO<sub>2</sub> concentration at Fort and Maradana by nearly 5 µg m<sup>-3</sup> and NO<sub>x</sub> concentration by nearly 50 µg m<sup>-3</sup>. If the pollution level were to increase in this manner it would become a hindrance to the government's aim of making Colombo "the economic hub of the South-east Asia" due to the threats of exceeding permissible limits of air pollution.

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